

FINAL **RADIOLOGICAL SURVEY REPORT - SEAD-12** PHASE I AND PHASE II SURVEYS VOLUME IV - APPENDICES L THROUGH Q

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APPENDIX L

Guidance for Spectrum Analysis Process (Parsons, 2001)

GD-R-MCA-01 Controlled



Guidance for Spectrum Analysis Process

August 31, 2001

Parsons 1955 Jadwin Richland, Washington

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ACRONYMS AND ABREVIATIONS

Correction Factor for process "i"
centimeters
counts per minute
derived concentration guideline level
disintegrations per minute
Data Quality Objective
full width half maximum
health physicist
International Commission on Radiation Projection
1000 electron volts
Libraries Of Specific Radionuclides
multichannel analyzer
nonconformance report
National Commission on Radiation Protection and Measurement
National Institute of Standards and Technology
project health physicist
photomulitplier tube
quality assurance
Radionuclide Identification worksheet
region of interest (URSA specific)
standard operating procedure
uncertainty
Universal Radiation Spectrum Analyzer manufactured by Radiation Safety
Associates, Inc.
1 X 10 ⁻⁶ Curies

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1.0 INTRODUCTION

The purpose of this document is to provide guidance to Health Physicists (HPs) or Nuclear Scientists in the process of selecting, using, and analyzing energy specific radiation emissions data using spectroscopy. This guidance is used in conjunction with standard operating procedures such as:

- SOP-R-MCA-02, *Gamma Spectroscopy Instrument Operation*, Parsons Infrastructure and Technology Group, Inc., Richland, Washington current version.
- SOP-R-MCA-02, *Gamma Spectroscopy Instrument Operation*, Parsons Infrastructure and Technology Group, Inc., Richland, Washington current version.

This document addresses the use of radiation spectroscopy for collection of radiological data use in Parsons' field activities to support various clients. Radiation spectroscopy allows the collection of radiation flux data as a function of energy for energetic photons (i.e., gamma rays and X-rays), alpha particles, beta particles, and neutrons. The sections of this document addressing the various types and methods of spectroscopy will be included in this document, as the equipment is obtained and the need is identified. The change history will only indicate sections actually containing information.

This document is written for the use of professional Health Physicists and Nuclear Scientists and is not intended for use by others. It assumes a significant level of background information. This document is intended to provide guidance for completion and ensure the consistency of these activities. Specifically it will assist in the generation of reproducible and accurate data of the highest quality. The information in this document is addresses professional scientific decision, for which proceduralization is not practicable.

The major sections of this document address:

- Gamma Rays/ X-rays Spectroscopy,
- Alpha Spectroscopy,
- Beta Spectroscopy,
- Neutron Spectroscopy,
- Modeling,
- Survey Techniques, and
- Uncertainty.

Each section is intended to provide the support information and the process for implementation of spectroscopy in these areas to provide the data required by Parsons' various projects.

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1.1 Definitions

Geometry as used in this procedure refers to the relative configuration between:

- The radiation source and the detector (e.g., point source beneath detector centerline a 1 cm from the detector face) and the material,
- The distribution of the radioactive material in the radiation source.
- The type and amount of any materials between the source and the detector.

The materials associated with the radiation source and any associated container including backscatter surfaces.

Health Physicist is professional with at least 2 years of experience in implementing health physicist (radiological safety activities and/or radiological laboratory analysis) activities as described by the National Health Physics Society.

Mutichannel Analyzer (MCA) is an instrument with the capability of collection of radiation flux data as a function of radiation energy when attached to a suitable detector. These instruments typically have associated hardware/software for the identification of radionuclides in addition to the assessment of detected flux.

Nuclear Scientist is an individual with a background in nuclear engineering or radiochemisty and at least 2 years of experience in the implementation of radiological analyses.

- **Photomultipler (PM) tube** receives light pulses from a detector and produces a current pulse proportional to the energy of the photons received by the tube and this pulse can then be sorted and counted by equipment such as an MCA. The solid state equivalent is the photodiode.
- **Region of interest (ROI)** is a set of spectral data peak typically associated with a radionuclide. This set of peaks is used when quantifying activity.
- **Resolution** is a measure of the ability of the detector, photomultipler tube, and MCA system to include a discrete energy count in the appropriate MCA channel. In other words how uncertain (i.e., wide) the energy peak is. The resolution is the full width at half maximum of the full energy peak (FWHM) divided by the height of the energy peak (see Knoll, 1989).

1.2 Selection of Spectroscopy Types

To assess if spectroscopy is applicable and if applicable the appropriate types and methods to be used to collect the data it is essential to:

- review the projected radiological conditions at the site,
- identify the type of data necessary to meet the project objectives, and
- establish the appropriate data quality objectives (e.g., a method for establishing data quality objectives can be found in EPA, 2000 and EPA, 1987).

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Then the determination of the viability of the process based on the projected DQOs can be evaluate using the following steps:

- 1. Identify the radionuclides that maybe present due to past activities at the site in the samples.
- 2. Project the credible range of activities and activity ratio for these radionuclides.
- 3. Identify the projected background radiation levels (i.e., radionuclides, ambient flux, and activity concentration) associated with the general environment and specific materials (e.g., uranium decay series, thorium decay series, K-20) including decay progeny.
- 4. Review the radiation emissions of the materials present and assess the feasibility of detection using the various methods based on this data.
- 5. Evaluate interferences related to background and potential material present.
- 6. Project system geometries for in situ measurements and collected samples, to assess required correction for flux attenuation and impact of source dispersion on detection capability, measurement accuracy, modeling costs, and regulatory acceptance.
- 7. Identify viable mechanism for radionuclide identification and quantification.
- 8. Identify interferences and limitations associated with the method that would limit the viability of an approach.
- 9. The feasibility of obtaining confirmatory data (e.g., 2 spectral peak, radiation flux of a specific type) to reduce the uncertainty in the results.
- 10. Identify potentially cost effective alternative methods (i.e., sampling and analysis, controlling various radiation fluxes based on a conservative upper bound).
- 11. Identify relationship that would allow extrapolation of radiation data for a radionuclide from other radionuclide data, including reliability, defensibility, and regulatory acceptance.
- 12. Assess equipment, procedures, standards, and trained personnel availability for the various approaches.
- 13. Assess the approaches cost, schedule, safety, and regulatory compliance impacts to implement and defend.
- 14. Based on this data identify approach for various radionuclides that provide the best solution for project success, with emphasis on schedule, cost, technical feasibility, and regulatory acceptance.

In assessing the approach it is helpful to sort types and energies of radiations based on range in materials, well as interference (i.e., spectral overlaps) associated with the suite of expected radiation emissions.

The survey/analysis approach is typically documented in the work plan for the activity. In all cases the basis for the decision should be formally documented. Note, as project conditions change the approaches may need to be modified to provide a cost effective and safe mechanism for meeting the project goals.

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2.0 GAMMA RAYS/ X-RAYS SPECTROSCOPY

Gamma Ray/X-ray spectroscopy can be done with various types of detectors associated with a multichannel analyzer (MCA). Typically the MCA will use software to identify radionuclides and assess activity rather than permanently encode analysis routines. In some cases two software packages maybe involved one for use when the MCA is attached and the other for use with just the computer. This software package(s) is subject to the same requirements for verification and validation that is applicable to other types of software, under the applicable Parsons quality assurance (QA) program, such as QA-19.2.

2.1 NaI Based Spectroscopy

A typical NaI based Spectrometer consists of 6 pieces as shown in Figure 1 with associated cables and NaI crystal/PM-Tube packaging. Parsons currently has a Universal Radiation Spectrum Analyzer (URSA) which integrates the High Voltage supply, Pre-amplifier, and MCA into a single unit. The Fidler detector currently owned by Parsons has a beryllium window on the NaI crystal's integrated PM-Tube package.

2.1.1 Detector Selection

In choosing a NaI based spectroscopy system it is important to consider the detector characteristics, particularly crystal size and window material. Thin crystal, such as the Fidler, tend to be more effective at characterizing low energy photon emissions while large crystals such as the 3 X 3 (i.e., a 3 inch diameter cylinder 3 inch high) crystal is more effective at characterizing the higher energy portions of photon spectra (i.e., gamma rays and X-rays). In addition, the lower the thickness and atomic number of the surface coatings (i.e., typically measured as density thickness) the more effective the detector is at measurement of lower energy emissions. Crystal size typically needs to increase as:

- the flux to be detected decreases,
- the speed of travel (i.e., for surveys) increases,
- or the counting times (i.e., for static counting and surveys) decreases

The exception to this is when the photons of interest are low energy and then large diameter thin crystal allow the large detection area but decrease the background associated with the higher energy photons that would be detected in the additional volume of a larger crystal. Crystals with a well within the crystal allow the detection efficiency based on crystal geometry to exceed 20 thus significantly increasing the detection efficiency. Very large and specialized crystal shapes and sizes are often cost prohibitive. Detector selection is often the balances of what is practicable with the technically ideal solution, with detector selection being controled by the data quality objectives and considerations of practicality. If the choice of crystal size and shape is not obvious or addressed by

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specific guidance then it is typically appropriate to select a detector based on simple Monte Carlo modeling (see Section 6.0) of the detector response to determine what detector will allow you to meet your DQOs and schedule, within the acceptable range of costs.

Parsons currently has a Fidler crystal (see technical information in the Technical Manual section of the Parsons SOP manual). 1 X 1 (i.e., a 1 inch diameter cylinder 1 inch high), 2 X 2, and 3 X 3 crystal are readily available for sale or rent.

2.1.2 MCA Setup

The setup of an MCA system is dependent on the equipment to be used. Each system currently used by Parsons will be addressed briefly. In all cases setup should be based on a through review of the manufacturer provided documents.

2.1.2.1 Universal Radiation Spectrum Analyzer (URSA) with NaI Detector

Most of the setup parameters for the URSA system are addressed in procedure SOP-R-MCA-01, Gamma Spectroscopy Instrument Operation (URSA) and SOP-R-MCA-02, Gamma Spectroscopy Instrument Calibration (URSA). As part of the setup process for the URSA (see

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Figure 2) the Project Health Physicist (PHP) will need to provide some specific direction on the setup of the equipment. Sections 1.2, 2.0, 2.1, and 2.1.1 address the initial identification of the required equipment.

Smoothing factors are used to remove some of the spurious statistical fluctuations in the spectral data. A smoothing factor is basically some type of moving average. Smoothing is most important during the peak identification process of the spectral analysis and the analyst will typically look at various values to so that the most effective credible peak identification can be obtained. The smoothing factor for data collection is typically set so that the low energy peaks in the Cs-137 spectra can are just below the resolution of the instrumentation. The URSA peak smoothing scales are 1, 8, 16, 24, 36, and 48. Based on past experience and a review of resolution of the Cs-137 spectra the PHP will establish the appropriate smoothing factor.

During setup the PHP will need to provide the projected initial operating **High Voltage and Maximum High Voltage** for the detector. This information should be present in the detector's manual/literature or from the manufacturer, although the initial operating high voltage may be more effectively determined based on past experience with the detector once sufficient data is available. The PHP may elect to reduce the Maximum High Voltage recommended by the manufacturer to reduce the noise at low energies. This will typically result in the need to increase the pre-amplifier gain during the setup activities (see SOP-R-MCA-02).

The **recalibration period** for the equipment setup is typically based on manufacturer recommendations, although this should be modified in experience with the equipment or similar equipment for the intended usage indicates other values are more appropriate. For the activities associated with setup and calibration of the URSA (see SOP-R-MCA-02) the recalibration periods in Table 1 have been established pending better data.

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Figure 2 URSA MCA General Operations Screen



Table 1 Calibration Expiration Period			
Activity	Typical Re- Setup/Calibration Period (choose less those listed) (months)		
Setup	12		
Energy Calibration	12 or Setup expiration		
ROI	12 or Energy Calibration expiration		
Efficiency Calibration	6 or ROI expiration		

Choice of the **calibration source** must be based on the projected radionuclides of interest and those potentially present in the background materials and the ambient environment. The selection of the calibration source(s) should be to span the energy range of interest as determined based on Sections 1.2 and 2.1.3. Where feasible a peak every 200 to 300 keV is preferred with a total activity of less

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than 500,000 cpm in the detector corrected for the area and projected position of the source. In addition a 1 \boxtimes Ci Cs-137 source is helpful for setup and calibration of the system. These sources must be traceable to the National Bureau of Standards and Technology (NIST) or an equivalent organization. If quantification is not required then, the source traceability need only address identification/purity of the radionuclides and a general indication of the radionuclides relative activity. When specifying **spectra lines** for radionuclide identification the specification of a primary and secondary line with a known relative activity ratio is preferred.

To establish the **count times** (or required number of counts) for spectral collection the PHP must consider:

- the established data quality objectives and how to effectively achieve them including the balancing of background data count times and location/sample count times.
- practicable limitations of cost, schedule, and personnel exposure.
- whether it is feasible to review results and then re-initiate data acquisition at a later time if further data is needed for a location/sample to meet the data quality objectives.
- the projected radioactivities of the various radionuclides that may be present.
- the level at which the activity can be treated as not requiring detailed quantification (i.e., the point at which only a less than number is required) for the limiting case radionuclides, and
- a typical count time is about 30 minutes for in situ measurements at environmental levels and about 5 to 10 minutes for sample counting but is dependent on source activity.

It is important to recognize that count time (or required number of counts) is always a balance between practicality and data accuracy, which must reflect the data quality objectives.

2.1.3 Analysis of NaI Spectra

The software associated with MCA provides an integrated system of peak analysis for the identification of radionuclides and peak height analysis to assess activity of the radionuclide. When interpreting NaI spectrometer results various effects, which may be dependent on crystal size and geometry, must be considered. These peaks are best characterized based on experimental data but can be projected using Monte Carlo analyses. The discussions in this section are based on Shafroth, 1967; Knoll, 1989; and Crouthamel, 1970.

2.1.3.1 Peak Identification and Quantification Interferences

When attempting to identify and quantify radionuclides in the environment or a sample, the potential interferences associated with NaI spectroscopy will need to be considered. This includes the continuums and peaks produced that are not useful for the identification and quantification of the radionuclides present and the presence of ambient background radiation and radioactive material. These interferences result in peaks that do not support radionuclide identification and quantification and quantification and effect that significantly reduce the resolution of the peaks of interest. In some cases for low count rate peaks the peak may be totally obscured by these interferences. In addition, background or source material of interest may also produce peaks that totally obscure a peak of interest. Also a peak may result in the identification of several radionuclides most or all of which

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are not present or not of interest. Thus the review of spectral data to identify radionuclides and quantify the activity present must involve a detailed analysis of the results with support information to provide an assessment of radionuclides present, their quantity, and the uncertainty associated with this determination. The sections that follow provide a brief introduction to some of the potential interferences.

The **characteristic X-ray escape** peaks are one effect (see Figure 3). In the photoelectric absorption process, the absorber (i.e., about 29 keV) emits a characteristic X-ray for NaI. If this X-ray escapes before absorption (i.e., many of the X-rays emitted near the detector surface may escape) this energy is not detected. Thus energy deposited in the detector is decreased by the energy of these X-rays, that escape; resulting in a second peak with energy equal to the photopeak minus the energy of the characteristic X-ray. This peak is generally called the X-ray escape peak and is most significant in low incident gamma ray energies and for detectors, like the Fidler, with high surface to volume ratios.





The **compton continuum** is another characteristic of the interaction of radiation with the affects the spectra. Compton scattering produces a continuum of energies from the scattering of radiation (see Figure 4). At several hundred keV compton scatter becomes important. Since only a fraction of the incident energy is absorbed in compton scattering the variability of this fraction results in a continuous distribution of energies rather than a discreet peak. This continuum can interfere with peak identification.

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Figure 4 Compton Continuum (Shafroth, 1967)





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The **bremsstrahlung escape** continuum (see Figure 5) is a source of interference with peak identification. This is caused by the escape of some of bremsstrahlung photons which decreases the energy absorbed in the detector based on the amount of energy lost. The fraction lost increases significantly as the energy of the incident photon increases.

A similar process involving the loss of the **secondary electrons** also occurs near the surface of the crystal and may cause an effect similar to characteristic X-ray escape or bremsstrahlung escape if the crystal is small (e.g., a Fidler crystal). This effect is more significant for higher energy photons since the secondary elections will have a higher energy and thus a longer range.

The **backscatter peak** (see Figure 6) may also be present in spectra. A peak in the vicinity of 0.2 to 0.25 MeV caused by gamma rays from the source that have interacted with the surrounding materials, including the detector wall, by compton scattering.

The **annihilation peak** if the source included positron emitters or the photon spectra has energies in excess of 1.2 MeV so pair creation can occur, then the photons associated with positron annihilation (i.e., 0.51 MeV) (see Figure 6) may occur in the spectra. If the 0.51 MeV is pronounced you may also multiples of this energy due to simultaneous detection of annihilation photons.

In addition **background material** and the **ambient environment** provides various sources of radiation with their own characteristic peaks that interfere with radionuclide identification based on peak identification. Typically this impact can be minimized by electronic subtracting out the applicable background spectra if it is available. Typically these are the naturally occurring radionuclides (e.g., see **Table 2**) and in some cases other isotopes maybe present due to commercial usage of radionuclides and possibly fallout. In addition to the natural environment ambient background, there are also various materials that may contain or have associated radioactive material (e.g., see Table 3) which will also produce interference in the data collected. Thus it is important to consider the impacts of background radiation and the approach for correcting for this impact (e.g., typically background subtraction).

These interferences result in false peak and peak broadening which must be considered during peak identification. In addition, any peak maybe be an indicator of several different radionuclides thus other consideration must be used to support peak identification. Whenever feasible radionuclide identification should be based on multiple peaks that occur in the correct relative ratios. Finally the credibility of the presence of the radionuclide must be considered.

2.1.4 Peak Identification/Quantification Library

Peak identification libraries are needed for the peak identification process and the activity quantification process. These libraries need to include both peak energy and yield data. The default libraries supplied by the URSA manufacturer are based on David Kocher's *Radioactive Decay Data Tables* (DOE/TIC-11026). All peak identification/quantification libraries must be based on a recognized source of spectral data. Currently the preference for the source of this data, in order of preference, is:

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- 1. U.S. Department of *Energy 's National Nuclear Data Center (NNDC)* at Brookhaven National Laboratory (access is available through the internet),
- 2. David Kocher's Radioactive Decay Data Tables (DOE/TIC-11026), or
- 3. ICRP,s (International Commission on Radiation Protection) *Radionuclide Transformations Energy and Intensity of Emission*, Annals of the ICRP, ICRP Publication 38.

Use of library data sources is questionable and a specific justification of such a decision needs to be documented. Peak libraries should include all credible radionuclides including those associated with background. Any library used must be approved by the PHP and, if it is not an existing library, it must be documented and reviewed, as if it were a Parsons' calculation.

Figure 6 Annihilation Radiation Related Peaks (Crouthamel, 1970)



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Table 2 Naturally Occurring Radionuclides (ICRP-38, NCRP-93 & NCRP-94)					
Radionuclide	Parent	Source	Alpha	Beta	Gamma/ X-ray
			Emission Energies (MeV)		
H-3	cosmogenic	natural (very low abundance)		0.00568	
Be-7	cosmogenic	natural (very low abundance)			0.478
C-14	cosmogenic	natural		0.04945	
Na-22	cosmogenic	natural (very low abundance)		0.215	0.511, 1.28
K-40	primordial	natural (about 0.0118% of natural K, usually a small fraction compared to U in most soil/rock based materials)		0.585	1.46
Rb-87	primordial	natural (Rb abundance is less than 1% of K)		0.111	
Th-232	cosmogenic	natural (activity is typically 1 to 4 times the U-238 activity)	9.9 - 4.1		
Ra-228	Th-232	Th-232		0.055	
Ac-228	Ra-228	Th-232		1.2 - 2.1	0.34 - 0.96
Th-228	Ac-228	Th-232	5.3 - 5.4		0.08
Ra-224	Th-228	Th-232	5.4 - 5.7		0.24
Rn-220 (gas)	Ra-224	Th-232	6.3		
Po-218	Rn-220	Th-232	6.8		
Pb-212	Po-218	Th-232		0.35 - 0.59	0.24 - 0.3
Bi-212	Pb-212	Th-232	6.0 - 6.1	1.6 - 2.3	0.04 - 1.7
Po-212	Bi-212	Th-232	8.8		
TI-208	Bi-212	Th-232		1.3 - 1.8	.5 - 2.6
U-235	cosmogenic	natural (in natural uranium about 4.5% to 5% of U-238 activity)	4.3 - 4.6		0.14 – 0.2
Th-231	U-235	U-235		0.14 - 0.31	0.03 - 0.08
Pa-231	Th-231	U-235	4.9 - 5.0		0.02 -0.08
Ac-227	Pa-231	U-235	4.8 - 5.0	0.4	0.02 - 0.09
Th-227	Ac-227	U-235	5.7 - 6.1		0.05 - 0.31
Fr-223	Ac-227	U-235		1.2	0.05 - 0.24
Ra-223	Th-227/ Fr-223	U-235	5.6 - 5.8		1.5 - 0.33
Rn-219 (gas)	Ra-223	U-235	6.4 - 6.8		0.27 - 0.4
Po-215	Rn-219	U-235	7.4		
Pb-211	Po-215	U-235		0.29 - 1.39	0.410 - 0.83
At-215	Po-215	U-235	8.0		
Bi-211	Pb-211/ At-215	U-235	6.2 - 6.6		0.35
Po-211	Bi-211	U-235	7.5		0.57 - 0.9
TI-207	Bi-211	U-235		1.4	
U-238	cosmogenic	natural	4.15, 4.2		
Th-234	U-238	U-238		0/103, 0.193	0.063, 0.093
Pa-234m	Th-234	U-238		2.29	0.765(0.3%), 1.00 (0.6%)
U-234	Pa-234m	U-238	4.72, 4.77		0.053 (0.2%)
Th-230	U-234	U-238	4.62, 4.68		0.068(0.6%)

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Table 2 Naturally Occurring Radionuclides (ICRP-38, NCRP-93 & NCRP-94)					
Radionuclide	Parent	Source	Alpha	Beta	Gamma/ X-ray
			Er	nission Energies	(MeV)
Ra-226	Th-230	U-238	4.6, 4.78		0.186
Rn-222 (gas)	Ra-226	U-238	5.49		
Po-210	Rn-222	U-238	6.0		
Pb-214	Po-210	U-238		0.65, 0.71, 0.98	0.295, 0.352
Bi-214	Pb-214	U-238		1.0, 1.51, 3.26	0.609, 1.12, 1.76
Po-214	Bi-214	U-238	7.69		
Pb-210	Bi-214	U-238		0.016, 0.061	0.047
Bi-210	PB-210	U-238		1.16	
Po-210	Bi-210	U-238	5.31		

Table 3 Common Comsumer or Industrial Product Radionuclides				clides
Radionuclide	Source	Alpha	Beta	a Gamma/X-ray
		E	mission En	ergies (MeV)
Ra-226 &	Instrumentation Dials (i.e., luminous materials),		Various see	e Table 2.
progeny	lighting rods			
Th-232/U-	Building materials, ceramics, counter weight, or		Various see	e Table 2.
238/U-235 &	high density weights, ceramic glazes, fly ash			
progeny				
Th-232	Welding Rods, Lantern Mantels, special glass (e.g.,		Various see	e Table 2.
	lenses)			
Am-241	Smoke Detectors, Pace Makers, density gauges	5.49, 5.44		0.060, numerous lines
				below this region
H-3	Lights/lighting, luminous materials		0.00568	
K-40	Fertilizers, dental products		0.585	1.46
Co-60	Various Irradiation and gauging sources, Spark gap		0.0958,	1.17, 1.33
	irradiators, spark tubes & glow lamps (i.e.,		0.626	
	fluorescent tube starters)			
Ni-63	Voltage regulators, surge protectors, spark tubes &		.0171	
	glow lamps (i.e., fluorescent tube starters)			
Kr-85	Lighting, electronic tubes, spark tubes & glow		0.251	0.514
	lamps (i.e., fluorescent tube starters)	1		
Cs-137	Various Irradiation and gauging sources, Voltage		0.173,	0.662
	regulators, surge protectors		0.425	
Pm-147	Luminous materials, spark tubes & glow lamps (i.e.,		.062	
	fluorescent tube starters)			
Po-210	Static eliminators	5.31	T	
Pb-210	Voltage regulators, surge protectors	Various see Table 2 .		
Pu-239	Density gauges	5.1, 5.2		numerous lines in the
				less than 0.03 region
Pu-238	Pacemakers	5.46, 5.5,		numerous lines in the
				less than 0.03 region

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2.1.4.1 Libraries Of Specific Radionuclides (LSR)

Typically MCA radionuclide/isotope identification/quantification software allow development of libraries of specific radionuclides (LSR). These LSRs reduce the number of false identification of peaks that may have multiple attributions. However, they may also result in the failure to appropriately identify and/or quantify radionuclides, if the LSR is not complete. When establishing an LSR it is important to include all radionuclides that may be present associated with the location, sample, material background, and/or ambient environment. In addition, all peaks that are significant contributors to the flux (i.e., 1%) need to be identified, even if they will not be used for identification and quantification of the radionuclide, they may represent an interference to another radionuclide. This becomes particularly important when a more common radionuclide has a peak that may interfere (i.e., cause false identification or quantification) of another radionuclide because it has a minor peak in the same region. These interferences complicate the interpretation of spectra significantly particularly for radionuclides with very low action levels/DQOs.

The LSRs developed must meet the criteria for a library, as specified in Section 2.1.4. As long as the library from which the LSR is generated is appropriately documented, the documentation of the LSR can be limited to the working datasheets and project specific documentation. However, it should to added to the LSR Listing datasheet in the SOP Manual and verified by a Health Physicist.

2.2 Analysis of NaI Spectra

Spectrum analysis is initiated by setting up the URSA or running the URSA software on a computer. Select the appropriate ROI for the spectra being analyzed. Identify the spectra to be analyzed and associated background(s) spectra, then initiate a Radionuclide Identification worksheet (see Appendix A) (RIW). The analysis number on the RIW is sample/location spectrum file name proceeded by "RIW-". If quantification is required page 2 of the RIW will be completed.

2.2.1 Radionuclide Identification

The background spectrum for the sample/location spectrum of interest should be loaded as the background spectra and the sample/location spectra as the active spectrum. Document the background spectra's file name(s) on the RIW and assign it an identification (which is unique for this datasheet). Where multiple background files maybe applicable the sample/location spectrum maybe analyzed with each and the results used to select the background most appropriate to the sample/location. Background subtraction should improve the resolution on the peaks of interest.

Once the spectra are active, use the URSA software to find the various peaks and repeat this process with the various smoothing factors, as needed, to eliminate noise based peak identification but not eliminating real peaks. If several smoothing factors appear appropriate treat each one as a separate case and assign it the existing analysis number followed by a lower case Greek letter with first letter assigned to the smallest smoothing factor to be evaluated and then increasing both as needed. If multiple smoothing factors are used in the analysis, the smoothing factor analysis must include all available smoothing factors between the smallest and largest smoothing factors used. Review the

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peak identification visually and eliminate inappropriate peak identification and add any peaks that may have been missed. Have the software conduct a peak identification analysis and print out a copy of the peak identification report. Record the RIW number, a dash (i.e., "-"), "P", a dash (i.e., "-"), the background filename identifier from the datasheet, and if necessary a dash (i.e., "-") followed by the smoothing factor lower case Greek identifier. Review the outputs of this peak identification process against the projected interferences discussed in this document and identify any peak may be inappropriately identified. Then review of the radionuclides identified for confirming peaks and credible radionuclides that maybe present. Identify the peaks that appear to be clearly appropriately identified and those that are clearly misidentified and annotate this on the record.

If a peak is identified several times be sure to resolve, which multiple identifications may be valid. The determination maybe based on determining if the relative fraction of the peak that should be assigned to each identification is appropriately apportioned for the confirmatory peak and other information (i.e., known relative ratios of radionuclides based on known relationships, such as progeny or natural relative isotopic ratios). If there are peaks that have multiple identifications note this on the report for later followup. Also clear identify any unidentified peaks for followup. Sign and date this report near the identification number on this report. This gives real time results of the radionuclides identification should be completed initially through peak centroid +/- 10 keV (or a value specified by the PHP and noted in the comment section of datasheet GD-R-MCA-1-2, Appendix A) comparison and confirmed through comparison of the full width at half maximum (FWHM) of the software library and the results. Through the use of these two techniques the potential for misidentification can be limited.

Repeat the process described above based on peak identification for an analysis based on FWHM. The "P" in the identification number will be an "F" for the FWHM analysis. Repeat this process to address all applicable smoothing factors and background data sets.

Use these reports and any available support data to complete the analysis and the Radionuclide Identification worksheet (see Appendix A) (RIW). Identify these reports on the RIW and attach them to the RIW. Radionuclide identification should use both sets of data and where applicable any data reports based on alternative backgrounds and smoothing factor data to attempt to eliminate multiple identification of peaks and unidentified peaks documenting this on the radionuclide identification on the RIW. Where there is multiple identification of peaks that cannot be resolved based on other data the HP may show alternatives for the radionuclides identification, then the limit case (i.e., limiting case for the specific analysis or evaluation being made) radionuclide will be used in subsequent analysis. Note, when several alternative radionuclides are identified use of these radionuclides in the analysis should not exceed an applicable fraction greater than one. Laboratory based analysis may also be used to resolve peaks with multiple identification or unidentified peaks if determined to be justified by the PHP and Project Manager.

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2.2.2 Radionuclide Quantification

Quantification of the activity is based on the ROI and associated peak identification. For the radionuclide identification the URSA should be calibrated for the specific or span the range of the radionuclide of interest in the ROI being addressed. This should include consideration of confirmatory peaks. Note, quantification can only be done based on traceable sources. The activity projected by the URSA using the quantification results will be based on the specific geometry of the calibration sources used in quantification. The sources are typically point or small area sources. However, the material being characterized is often in a different relative geometry with attenuation of the flux occurring from the source and intervening materials. To defend quantification of the activity present it will be necessary to model the impact of the geometry including potential variability in the geometry and correct the difference from the calibration source geometry.

Often in situ quantification provide a more accurate assessment of true conditions where the material is not uniformly distributed at the location or located on the surface at the location. Laboratory sample for non-uniform contamination generate inconsistent (i.e., randomly providing ultra-conservative or non-conservative results in some cases) results depending on:

- Whether the random sampling process collected the locations of high contamination and
- Whether the material collected contained large amounts of contaminated material.

If the sample is high localized (e.g., surface contamination) the amount of matrix required to meet the minimum analytical requirements typically results in significant dilution of the sample and significant under estimation of the surface activity concentration. In addition, in situ quantification can provide a more practicable solution.

To correct for geometry effects it is necessary to accurately model (i.e., assess) relative flux associated with:

- The detector-source geometry to provide the calibration baseline,
- The credible detector-source geometries to provide an assessment of the potential correction for the difference between the calibration geometry and the potential conditions, and
- Model the credible detector-source geometries to include consideration in the variability of material thickness, composition, and density in assessing these differences.

Once the data has been modeled, the geometry correction factor(s) (GCF) can be calculated for each credible geometry (including consideration of material thickness, composition, and density) using:

GCF = (credible detector-source geometry flux based on modeling) /(detector-source geometry to provide the calibration baseline flux modeling).

Once the range of GCF (with their associated uncertainties are established) the range of and a typical GCF for a measure can be established. The typical GCF is a probability weighted average for the various credible GCFs. The projected activities measured by the URSA are multiplied by

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the GCF or the range of GCFs to assess the range of activity that maybe present for a specific measurement. In making these assessments it is essential to consider the propagation of error in the results and provide the associated uncertainties. (see Section 9.0)

These results should be documented consistent with the applicable Parsons and project calculation documentation procedure/requirements.

2.3 Intrinsic Germanium Spectroscopy

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3.0 ALPHA SPECTROSCOPY

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4.0 BETA SPECTROSCOPY

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5.0 NEUTRON SPECTROSCOPY

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6.0 MODELING

The purpose of modeling is to determine the relationship between the calibration geometry and the field geometry to allow quantification of the measured activity. Typically the intent is to assess the difference in the detected flux in the detector for the two conditions so a correction factor based on the relative ratio for assessment of activity can be developed. Such modeling would involve the assessment of the relative changes in the detected flux between the calibrated conditions and the field conditions. Often the field conditions must be projected based on a range of conditions that might exist. When assessing the calibration and field conditions it is import to address:

- Relative distance and position of the source relative to the detector,
- The materials and geometry of the detector,
- The materials present between the source and the detector,
- The source geometry, materials, and the activity distribution within the materials,
- Potential back-scatter surfaces (location and material),
- When assessing material properties the type of material and its density will need to be addressed, and
- The probability of the various variable field conditions existing.

The acceptable uncertainty and level of detail associated with this data and the selection of the software used to model the relative relationships is based on the requirements of the DQOs. In all cases the uncertainties in the modeling and the propagation of these uncertainties in results must be considered.

Currently Parsons typically uses MCNP software for this modeling. All modeling activities must be clearly documented consistent with Parsons and the project requirements for the documentation of calculations. Further, the software used must be validated and verified for this use consistent with the Parsons and project procedures and requirements.

The results of the modeling are normally an assessment of the Correction Factor (CF_i) between the field geometry detected flux (FGFi) and the calibration geometry's detected flux (CGF_i) for field geometry "i". Specifically:

$$CF_i = FGF_i / CGF_i$$
.

Where defensible, probabilities can be assigned to the various field configurations (P_i) then a typical Correction Factor (CF_t) can be provided where:

$$CF_t = \bigvee_i P_i * CF_i$$
.

When calculating CF_is and CF_t ensure that the propagation of error is considered to provide an assessment of uncertainty. The CF data will normally include the range of applicable CF_is, and CF_t P:/InstSOP/GD-R-MCA-01-a 09/17/015:27 PM

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with 95% confidence level uncertainties. The workplan, sampling and analysis plan, and/or the DQOs will establish:

- What modeling is required,
- The acceptable uncertainties (i.e., typically 95% confidence level two tailed),
- Which CFs are calculated and how they are used.

All CF determination shall be clearly documented in a calculation consistent with Parsons' and the project's requirements and procedures.

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7.0 SURVEY TECHNIQUES

The survey techniques used by Parsons should be consistent with:

- MARSSIM,
- NMSS Decommissioning Standard Review Plan (NUREG-1727)
- Manual for Conducting Radiological Surveys in Support of License Termination (NUREG/CR-5849),
- Analysis of the Ability of Current Health Physics Instruments to Predict Dose in Exposed Individuals (NUREG/CR-4239),
- Human Performance in Radiological Survey Scanning (NUREG/CR-6364),
- A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys (NUREG-1505),
- Measurement Methods for Radiological Surveys in Support of New Decommissioning Criteria (NUREG-1506),
- Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions (NUREG-1507),
- applicable Parsons SOPs,
- applicable project requirements and procedures,
- the project DQOs, and
- good health physics practices

In selecting survey techniques it is important to consider:

- DCGLs and associated DQOs for the project,
- the type, energy, and projected flux of the radiation to be detected,
- possible inference/confounding-factors in interpretation of the data based on the projected radionuclides of interest in the background environment,
- the detection limitations for the instrumentation based on survey height and scanning rate,
- scanning heights should be consistent with projected averaging areas/volumes for contamination based on the DQOs and field conditions,
- the human factor limitations for personnel (e.g., detection of change, such as meter movement versus sound, easy of repetitive handling of the equipment),
- when scanning versus static counts will be used,
- when energy based radionuclide identification maybe appropriate,
- where direct survey versus smears/material-sampling should be used,
- the environmental conditions at the site,
- practicability limitations in the selection of equipment,
- regulatory acceptance of the equipment,
- availability of established procedures and protocols, and
- availability of the instrumentation and personnel required.

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The basis of the selection of survey instrumentation types and techniques will be fully documented in the DQO and SAP documentation.

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8.0 DATA VALIDATION AND VERIFICATION

The data validation and verification process consists of several components, such as:

- Project's DQO or equivalent based data validation and verification process as addressed in Section 8.1 of this document.
- Project's or Parsons' process for the investigation of apparent data errors during collection as addressed in Section 8.2 of this document,
- Validation and verification of the software used in support of radiological survey and analysis activities that are addressed by applicable project or Parsons procedures, such as QA-19.2, *Quality Assurance Procedure, Computer Software Verification and Validation, I, Quality Assurance Manual, Parsons, Richland, Washington,*
- Validation and verification of modeling and other calculations that are addressed by applicable project or Parsons procedures such as, *Preparation of Calculations, Project Procedures Manual*, Parsons, Richland, Washington,
- Resolution of nonconformance reports (NCRs) associated with data that are addressed by applicable project or Parsons procedures such as, QA-15.0, *Quality Assurance Procedure, Nonconformance Control, Quality Assurance Manual, Parsons, Richland,* Washington.

8.1 General Data Validation and Verification Process for Verified Field Data

The general data validation and verification activities discussed in this document are intended to support the data validation and verification process associated with the specific project. When ever discrepancies are identified the appropriate project and QA procedures (e.g., NCR process) should be implemented, as needed. The first step in the data validation and verification process is to review the data documentation and ensure that it meets the requirements of the applicable procedures and requirements. Verify that the appropriate paperwork is in place and signed by the data collector and verifier.

Once it has been established that the appropriate documentation is available the analysts and data collectors should review the data for the following technical considerations, prior to its release to the customer:

- Are the data technical consistent,
 - Is the behavior of the data consistent with known scientific principles,
 - Are the changes in the data discontinuous or the rate of change incongruous, such that the data suggests that a recording or collection error may have occurred.
 - Do the results fall below background at a frequency or in an amount that would suggest a recording or collection error beyond the normal fluctuations of background.
 - Does the data imply the unexplained creation or loss of flux or material beyond the variability expected in the statistical fluctuation of the data.
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- Is the activity and the associated units consistent with the credible range of data values.
- Review the specific activity of the source materials to verify that the mass, density, and activity have credible values.
- Are there any non-credible radionuclides identified based on the data.
- Are the radionuclides that should be present represented in the data at credible levels.
- Are the relative ratio of activity and hazards consistent with known scientific information.
- Were appropriate and current calibration sources used,
 - Are all the sources used in the calibration of the instrument traceable with current calibrations.
 - Do the sources used in the calibration span the energy range of interest.
 - Are the activity levels of the sources consistent with the capability of the instrumentation and at a level and accuracy to meet the quantification required in the DQOs.
 - Is there evidence that the source have been damaged so that the calibration may not be valid.
 - Is the source geometry consistent with that needed to meet the DQOs or has justified modeling been performed to address the impact of the source geometry.
 - Is the energy response behavior consistent with expected energy response and/or scientific principles.
 - Are there coatings on the source that may degrade the energy of the emitted photons.
- Is there appropriate documentation for all calibrations sources in the records,
- Were appropriate peaks selected for radionuclide/isotope identification and quantification of activity,
 - Are the peaks selected for radionuclide identification part of the designated radionuclide/progeny spectra.
 - Are there interferences from background, detector/instrument response, or other radionuclides that may have resulted in an incorrect interpretation of this data.
 - Were confirmatory peaks selected and evaluated to verify the interpretation of the primary peaks.
 - Are the relative activity ratio between the primary and other peak associated with radionuclide consistent with the yields for each peak.
 - Does the peak analysis and FWHM produce consistent results.
 - Are there peaks with duplicate identifications that can be separated.
 - Are the unidentified peaks and how will their identification be resolved.
 - Is it feasible to quantify the activity based on the activity level of the peak and the interference from other sources of spectral data.
- Are the background values credible and are the background data consistent with the statistical variability expected,
- Are the expected progeny present and in the appropriate ratios (Note, when making this assessment the variation in solubility of the progeny and presence of gaseous progeny may affect these ratios significantly),
- Are the expected background radionuclides present,

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- Are there any radionuclides identified or present in concentrations that are not credible or at least require followup,
- Have appropriate background data sets been obtained,
- Is there consistency between these values and the other survey data,
- Are the radionuclides present in credible relative ratios,
- Is additional count time required to resolve spectra appropriately,
- Are there unidentified peaks that require resolution,
- Are there potential mis-identified peaks (e.g, impact of interferences),
- Does the equipment appear to be functioning properly,
- Were any technical concerns/inconsistencies appropriately followed up on and resolved,
- Has the appropriate quality control/verification samples been taken,
- Are there any other outstanding technical, operational, or quality issues associated with the data. (Carefully review any comments on the datasheets as an indication of such impacts.)

Review the survey results using other techniques to verify that they are consistent with the results from these calculations. Consider progeny and other radiation emissions. If there are inconsistencies issue an NCR to document resolution of this potential inconsistency. The explanation or justification of any inconsistencies should be documented in a manner consistent with Parsons or the project's procedures and requirements addressing calculations.

If samples are sent for analysis then review these sample results and compare them with the in situ measurements for this activity. If the values are not consistent (i.e., with the projected uncertainties of the two results) review the data for potential problems and issue and NCR to document resolution of this potential inconsistency. The explanation or justification of any inconsistencies should be documented in a manner consistent with Parsons or the project's procedures and requirements addressing calculations.

It is recommended that appropriate statistical tests be applied to the various data sets to verify that statistical anomalies are not present in the data. Statistical anomalies in the data shall be treated like any other data discrepancy and handled accordingly.

8.2 Resolution of Field Data Verification Problems

Until the data quality and associated uncertainty are resolved the data should be labeled as suspect and not used for safety or environmental protection determination, unless the data is assumed to be the most conservative value. If there is an apparent problem associated with data collection the HP or Project Manager should initiate an NCR documenting the apparent problem. The HP shall review the apparent problem to determine its impact on data quality. If the data is determined to be suspect and thus not usable this should be documented on the NCR form and the process resolved under the NCR process. If the HP determines that the data is usable then in addition to the implementation of the NCR process the HP shall provide a technical justification of the data validity in the form of a Parsons calculation which must be prepared, reviewed and issued in a manner consistent with applicable project and Parsons procedures and requirements.

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In establishing the potential validity of impacted or suspect data the HP should review the source and probability of occurrence of the event or condition that cause the impact. Determine the additional uncertainty this condition may have on the resulting data. Then the HP should determine if the data has any functional value based on this uncertainty.

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9.0 UNCERTAINTY

Uncertainty in the results for these measurements must always be determined and justified based on sound scientific/engineering data and practice. This uncertainty may come from many sources including:

- Statistical variability in the nuclear decay and counting process.
- Measurement error inherent in the equipment.
- Visual uncertainties resulting from interpolating a scale.
- Variability of the natural environment and the materials being measured.
- Uncertainty in the calibration of the equipment.
- Inherent bias in the measurement or measure data set.
- Statistical variability or inhomogeneity in the item or area being measured.
- Human observation and recording errors or intentional misrecordings.

With the exception of **human observation and recording errors or intentional misrecordings** the process will attempt to minimize and quantify these errors. The procedural and guidance process used in this activity is intended to minimize the potential human observation and recording errors or intentional misrecordings errors.

The **statistical variability** associated with the various process (e.g., the **nuclear decay and counting process**) is addressed using counting statistics and increasing the count times and number of counts/sample taken. Typically most thing in nature have lognormal distributions with the exception of basic natural process like radioactive decay, which is normal (i.e., pure guasian distribution). As the activity levels (i.e., count rates) decrease poisson statistics should be applied to the evaluation of this data. Whenever a statistical distribution other than those described above is used to characterize data associated with this activity a clear justification for the choice must be provided as a basis for this alternative distribution based on the physical characteristics of the process and not just on the apparent statistical behavior of a very limited data set. The confidence level to which uncertainties are to be established should be based on the DQO process with a default assumption that all uncertainties in data should be established at the 95% confidence level.

The **measurement error inherent in the equipment** are quantified by the calibration and accuracy check process for the instrumentation. Further, potential failure can be projected by the control charting process. The upper and lower bounds of the acceptable uncertainties are established based on the DQO process. The accuracy check boundary and the calibration uncertainty maybe used to assess the uncertainty associated with the equipment, although use of the actual calibration and accuracy check uncertainty maybe used. Data like the fine tuning results from the MCA can be used to assess instrument variability in addition to the calibration error. The preference in establishing the uncertainty of the data is to do a detailed analysis of all the data and propagate the error as appropriate or model it with monte carlo analysis. In addition visual uncertainties resulting from interpolating a scale must be considered in this uncertainty as discussed below. However, a default solution for equipment uncertainty (UNC) is:

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UNC = SQRT ($UNC_{cals}^{2} + UNC_{calF}^{2} + UNC_{act}^{2} + UNCvis^{2} + UMDA^{2}$) + MDA

where:

 UNC_{calS} is the specified uncertainty of the calibration source and/or the outside calibration. If there is more than one value involved this value is the square root of the sum of the squares of the values (Bevenington, 1969).

UNC_{calF} this is the uncertainty based on the field calibration ignoring the uncertainty in the calibration sources based on statistical variability and background. This should determined based on good health physics practices and the information in NUREG/CR-5849, NUREG-1575, and NUREG-1507). If a modeling correction factor is use then the uncertainty of UNC_{calF} and correction factor should be consolidated using the square root of the sum of the squares of the values (Bevenington, 1969).

 UNC_{act} is the uncertainty in the accuracy or tuning checks, which can be estimated as the 95% confidence level for the entire set of values generated.

UNCvis this is 50% of the smallest marked subdivision for an analog readout. For a digital readout it is the smallest value record by the read out (e.g., if the readout is 95.6 then the uncertainty is 0.1). (Typically can be ignore for most MCAs.)

MDA is the minimum detectable amount (a.k.a., minimum detectable activity) value for the measurement system. This can be computed as described in NUREG-CR-5849, NUREG-1506, or in a specifically reference technical document included in with the calculation. If the MDA is assigned a distribution of values based on a technical defensible scientific approach this value should be set to zero in the calculation of UNC.

UMDA is the 95% confidence level uncertainty in the MDA value if calculated.

Variability of the natural environment and the materials being measured is based on characterization by multiple measurement of the environment, either background or sample/location variability for the area of interest. (Note, in counting statistic count for extended times is the same as making multiple counts in this extended time.) The 95% confidence level uncertainty for the entire set of values generated

If there is a known **inherent bias in the measurement or measure data set** this value should be subtracted out of the result. If the bias is not known then it is presumed to be adequately addressed in the **measurement error inherent in the equipment**. If there is a known bias it should be removed prior to determining the **measurement error inherent in the equipment**.

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The statistical variability or inhomogeneity in the item or area being measured is extremely difficult to assess accept as partially quantified in the variability of the natural environment and the materials. Typically the balance of this uncertainty can only be addressed qualitatively.

9.1 Minimum Detectable Amount (MDA)

It is important to quantify the Minimum Detectable Amount (MDA) that the in-situ spectroscopy is capable of detecting to determine if the DCGLs can be met using this technology. To do this one must consider that the in-situ equipment is used to count a specific location for longer times than the 1 minute scalar static count that is used with survey instrumentation. The MDA is estimated using the following equation from NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination".

MDA =
$$\frac{2.71 + 4.65 * \sqrt{B_R * t}}{t * E * \frac{A}{100}}$$

- Where:MDA is the minimum detectable amount in $dpm/100 cm^2$
- B_R is the background count rate in cpm
- t is the count time in minutes
- E is the efficiency of the detector in cpm/dpm
- A is the active area of the detector in cm²

Using this equation with the detector information the MDA values for various count times and detectors can be estimated. The use of the ROI has the net effect of lowering the background count rate for that specific region. Radionuclide specific efficiencies and associated MDAs can be developed for other radionuclides as needed. Other formulas such as those in NUREG-1506 can be used to estimate the MDA. The basis used for assessing the MDA should be clearly documented. In addition, it is equally important to document how the MDA is used in subsequent analyses.

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10.0REFERENCES

Bevington, Phillip R., 1969. <u>Data Reduction and Error Analysis for the Physical Sciences</u>, McGrall-Hill, Inc., New York (Library of Congress # 69-16942).

Brown, W.S., & E.W. Abelquist, 1998. *Human Performance in Radiological Survey Scanning*, NUREG/CR-6364.

Crouthamel, C.E., F. Adams, & R. Dams, 1970. <u>Applied Gamma-Ray Spectrometry</u>, Pergamon Press, New York.

Department of Commerce, Department of Health Education and Welfare, 1970. *Radiological Health Handbook*, PB-230 846.

Department of *Energy 's National Nuclear Data Center (NNDC)* at Brookhaven National Laboratory (access is available through the internet), <u>http://www.nndc.bnl.gov/</u>, current version.

EPA, 1987. Data Quality Objectives for Remedial Response Activities Development Process, EPA-540/G-87-003.

EPA, 2000. Guidance for the Data Quality Objective Process, EPA QA/G-4, EPA/600/R-96/055.

Gogolak, C. V., et al, 1995, A Nonparametric Statistrical Methodology for the Design and Analysis of Final Status Decommissioning Surveys, NUREG-1505.

ICRP,s (International Commission on Radiation Protection) *Radionuclide Transformations Energy and Intensity of Emission*, Annals of the ICRP, ICRP Publication 38, Volume 11-13, 1983.

Kocher, David, 19 . Radioactive Decay Data Tables (DOE/TIC-11026),

Knoll, Glenn F., 1989. <u>Radiation Detection and Measurement</u>, John Wiley & Sons, New York, New York, 1989 (ISBN 0-471-81504-7).

NRCP (National Council on Radiation Protection and Measurement), 1987. *Ionizing Radiation Exposure of the Population of the United States*, NCRP Report No. 93.

NRCP (National Council on Radiation Protection and Measurement), 1987. *Exposure of the Population in the United States and Canada form Natural Background Radiation*, NCRP Report No. 94.

NRC, 2000. NMSS Decommissioning Standard Review Plan, NUREG-1727.

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NRC, NUREG-1575, 1997. Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), December 1997.

NRC, 1997. Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions, NUREG-1507.

NRC, 1995. Measurement Methods for Radiological Surveys in Support of New Decommissioning Criteria, NUREG-1506.

Oak Ridge Associated Universities, 1992. *Manual for Conducting Radiological Surveys in Support of License Termination*, NUREG/CR-5849.

Radiation Safety Associates, Inc., 2001. URSA Universal Radiation Spectrum Analyzer Operations Manual, Radiation Safety Associates, Inc. 19 Pendleton Drive, PO Box 107 • Hebron, CT, 2001.

Shafroth, Stephen M., 1967. <u>Scintillation Spectroscopy of Gamma Radiation</u>, Gordon and Reach Science Publishers, New York.

Parsons Procedures

SOP-R-MCA-02, *Gamma Spectroscopy Instrument Operation*, Parsons Infrastructure and Technology Group, Inc., Richland, Washington current version.

SOP-R-MCA-02, *Gamma Spectroscopy Instrument Operation*, Parsons Infrastructure and Technology Group, Inc., Richland, Washington current version.

QA-15.0, *Quality Assurance Procedure, Nonconformance Control*, Parsons Infrastructure and Technology Group, Inc., Richland, Washington, current version or equivalent Project specific nonconformance procedure..

QA-19.2, *Quality Assurance Procedure. Computer Software Verification and Validation*, Parsons Infrastructure and Technology Group, Inc., Richland, Washington, current version or equivalent Project specific nonconformance procedure..

Parsons	TECHNICAL GUIDANCE DOCUMENT	Page: A-lof 4 in this Section			
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APPENDIX A

Datasheets

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Parsons LSR Listing				GD-R-MCA-1-1						
Initiat	ed By (print)	Signature	D	ate		Sheet_	of			
						Establis	hed by			
Name	Radionuclide fo	llowed by energies	Radiation Type	Source of		Developed By: Verified				
	in MeV in pare	nthesis		Information		Signature	Date	Print Initials	Initial	Date
							-			
							_			
				Source I	Reference	1				
ID.	Description									
1	U.S. Department of <i>Energy 's National Nuclear Data Center (NNDC)</i> at Brookhaven National Laboratory (access is available through the intermet)									
-2	David Kocher's <i>Radioactive Decay Data Tables</i> (DOE/TIC-11026)									
3	ICRP,s (Internation of the ICRP, ICR	ional Commission on Radiation Protection) Radionuclide Transformations Energy and Intensity of Emission, Annals RP Publication 38								

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Parsons		Radionuclide Identification Worksheet			GD-R-MCA-1-2					
Quantif	ication Re	equired	Yes	No	If "Yes" includ	e a page 2 for each sheet	Sheet		of	Page 1
Pe	ak	Com	-1-	LSR:				R	adionuclide	
Channel	Energy (keV)	Samp Filena	ime	Backgrou Filenan	and an	Basis	Pr	imary	Alternativ	e (in order)
	(Id.	Fraction		Id.
						ta the second				
Comme	nts:		·							
Complet	ted by				Completed by (signature)				Date	
(prin					Authoriz	ed For Use				
PHP (P	rint)				PHP Signature				Date:	
Data Ve	rified			I_						
HP (Pr	rint)				HP Signature				Date:	

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2,	Parsons			Radion	uclide Identification	Worksh	eet	GI	D-R-MCA-1-2		
Quan	tificatio	n Requi	red Yes	No	Mass of sample (if applicable):	(g)	New LSR (opt	ional):	Sheet	of	Page 2
Peak E	Energy (ke	V) used					Correction 1	Factor (if appl	icable)	A	ctivity
1 st	2 nd	3 rd	ROI (Optio	onal)	Radionuclide	CF _g (units?)) Source (cal. #)	CF _v (units?)	Source (doc. # or cal. #)	URSA (units?)	Net (units?).
			2						-		
					<u> </u>				-		
Com	nents:	1				1					
Com (I	pleted by print)				Completed by (signatu	re)			D	ate	
					Aut	horized F	or Use				
	r (Print)				PHP Signature				D	ate:	
Data	Verified										
HP	P (Print)				HP Signature				D	ate:	

Parsons	TECHNICAL GUIDANCE DOCUMEN.	Page: A-4of 4 in this Section				
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APPENDIX M

Instrument Calibration Sheets- Phase II

Instrument Type	Serial Number	Use in	Field
		Start Date	End Date
FIDLER	A945P	6/5/2001	8/28/2001
FIDLER	A954P	6/5/2001	6/18/2001
FIDLER	A968P	6/19/2001	6/27/2001
FIDLER	A951P	6/20/2001	7/24/2001
FIDLER	A983P	6/27/2001	7/29/2001
Phoswich	119815	6/7/2001	7/28/2001
Phoswich	119803	6/7/2001	8/29/2001
Floor Monitor	138256	6/6/2001	7/14/2001
Micro Rem	C252A	6/6/2001	6/11/2001
Micro Rem	C251A	6/6/2001	8/28/2001
Pancake	61457	6/5/2001	8/28/2001
Pancake	61390	6/6/2001	7/29/2001

Use of Instruments in the Field- Phase II SEAD-12 Building Radiological Survey Seneca Army Depot Activity

Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Bicron AnalystSerial No.:A945PBicron G5 DetectorSerial No.:A378Q

Submitted by:..... W0MG4G

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters. The measurements were performed under ambient conditions of approximately 20 degrees Celcius and 40 percent relative humidity. Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

The reference standard(s) for this calibration:

(1) AN/UDM-11 Calibration Set, Amerricium 241, (Am-241) source serial number EN468.

(2) Eberline Model MP2 mini Pulser, serial number 434.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

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T. E. DAVIS LRSO USATSC-Tobyhanna

CRAIG A. GREDLEIN Chief, ACL USATSC-Tobyhanna

Report NumberW0MG4G-7020DCalibration Date25-May-01Calibration Due21-Nov-01

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255 •

Bicron AnalystSerial No.:A945PBicron G5 DetectorSerial No.:A378Q

Unless otherwise noted, all listed test results were obtained with the Analyzer switch set to "Ch 1".

1. Basic performance data:

High Voltage (kV): 1.10	Lower Level Discriminator (mV): 51
Sensitivity (mV): 100	Upper Level Discriminator (mV): 63
Batteries: replaced 1 ea 9 V	

2. Meter Accuracy when electronically pulsed (scaler reading are 1 minute counts)

	Applied	Initial Readings		Adjusted?	Final Re	adings
Range	(cpm)	Meter	Scaler	(Y/N)	Meter	Scaler
×1000	100,000	95,000	99,949	N	95,000	99,949
X1000	400,000	412,000	399,313		412,000	399,313
×100	10,000	9,700	10,001	N	9,700	10,001
X100	40,000	40,000	39,987	IN	40,000	39,987
×10	1,000	980	999	N	980	999
XIU	4,000	4,000	3,994	IN	4,000	3,994
x1	100	98	100	N	98	100
	400	405	399		405	399

3. Probe checked with Americium-241 (See notes, below)

	Арргох.	Applied			
	source-to-	2-Pi	Back-		
Analyzer	detector	emission	ground	Average	Average
Switch	distance	rate	reading	reading	detection
position	(in)	(cpm)	(cpm)	(cpm)	efficiency
Ch-1	6	70,100	400	10,600	0.15
Out	6	70,100	7,200	20,000	0.29
Ch-1	12	70,100	400	35,600	0.51
Out	12	70,100	7,200	65,300	0.93

4. Notes:

- 1. Source to Detector distance is the approximate distance from the test source to the center of the detector.
- 2. Applied rate is the sum of the certified 17keV and 60 keV emission rates from the AM-241 test source.
- 3. Background reading as observed on the unit under test at time of test.

4. Average reading is (average of one minute scaler count plus the analog meter reading) minus the local background at time of test

5. Geometry:

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Report Number	W0MG4G-7020D
Calibration Date	25-May-01
Calibration Due	21-Nov-01

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Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Bicron AnalystSerial No.:A954PBicron G5 DetectorSerial No.:A402Q

Submitted by:..... W0MG4G

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters. The measurements were performed under ambient conditions of approximately 20 degrees Celcius and 40 percent relative humidity. Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

The reference standard(s) for this calibration:

- (1) AN/UDM-11 Calibration Set, Americium 241, (Am-241) source serial number EN468.
- (2) Eberline Model MP2 mini Pulser, serial number 434.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

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T. E. DAVIS LRSO USATSC-Tobyhanna

CRAIC A. GREDLEIN Chief, ACL USATSC-Tobyhanna

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255

Report NumberW0MG4G-7011DCalibration Date25-May-01Calibration Due21-Nov-01

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Bicron Analyst Bicron G5 Detector

4.847

Serial No.: A954P Serial No.: A402Q

يحورها المرجع فالافاط فتستشفاه فالمتدر والورد الديمان فالاستمام والارار

Unless otherwise noted, all listed test results were obtained with the Analyzer switch set to "Ch 1".

1. Basic performance data:

High Voltage (kV): 1.04	Lower Level Discriminator (mV): 50
Sensitivity (mV): 100	Upper Level Discriminator (mV): 65
Batteries: replaced 1 ea 9 V	

الفشيدة الاتوا الجراد الاوا

2. Meter Accuracy when electronically pulsed (scaler reading are 1 minute counts)

	Applied Initial Readings		Adjusted?	Final Readings		
Range	(cpm)	Meter	Scaler	(Y/N)	Meter	Scaler
*1000	100,000	95,000	99,886	N	95,000	99,886
X1000	400,000	432,000	399,692	N	432,000	399,692
×100	10,000	9,300	9,994	N	9,300	9,994
X100	40,000	40,300	39,998		40,300	39,998
×10	1,000	970	998	N	970	998
×10	4,000	4,150	3,995	14	4,150	3,995
x1	100	95	100	N	95	100
	400	405	400		405	400

3. Probe checked with Americium-241 (See notes, below)

	Approx.	Applied			
Į .	source-to-	2-Pi	Back-		
Analyzer	detector	emission	ground	Average	Average
Switch	distance	rate	reading	reading	detection
position	(in)	(cpm)	(cpm)	(cpm)	efficiency
Ch-1	6	70,100	400	10,400	0.15
Out	6	70,100	7,500	21,700	0.31
Ch-1	12	70,100	400	36,300	0.52
Out	12	70,100	7,500	70,500	1.01

4. Notes:

1. Source to Detector distance is the approximate distance from the test source to the center of the detector.

2. Applied rate is the sum of the certified 17keV and 60 keV emission rates from the AM-241 test source.

3. Background reading as observed on the unit under test at time of test.

4. Average reading is (average of one minute scaler count plus the analog meter reading) minus the local background at time of test

5. Geometry:

Report NumberW0MG4G-7011DCalibration Date25-May-01Calibration Due21-Nov-01

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Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Bicron Analyst Serial No.: A968P Bicron G5 Detector Serial No.: A367Q

Submitted by:..... W0MG4G

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters.

The reference standard(s) for this calibration:

(1) AN/UDM-11 Calibration Set, Amerricium 241, (Am-241) source serial number EN468.

(2) Eberline Model MP2 mini Pulser, serial number 434.

The measurements were performed under ambient conditions of approximately 21 degrees Celcius and 40 percent relative humidity.

Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

T. E. DAVIS LRSO USATSC-Tobyhanna

CRAIG A. GREDLEIN Chief, ACL USATSC-Tobyhanna

Report NumberW0MG4G-7026DCalibration Date25-Jan-01Calibration Due24-Jul-01

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255

Bicron AnalystSerial No.A968PBicron G5 DetectorSerial No.A367Q

Unless otherwise noted, all listed test results were obtained with the Analyzer switch set to "Ch 1".

1. Basic performance data:

High Voltage (kV):	1.25	Lower Level Discriminator (mV):
Sensitivity (mV):	100	Upper Level Discriminator (mV):
Batteries:	replaced 1 each 9 vol	t battery

2. Meter Accuracy when electronically pulsed (scaler reading are 1 minute counts)

	Applied	Initial Readings		Adjusted?	Final Readings	
Range	(cpm)	Meter	Scaler	(Y/N)	Meter	Scaler
	100,000	100,000	100,005	N	100,000	100,005
X1000	400,000	422,000	399,625		422,000	399,625
x100	10,000	10,000	9,981	N	10,000	9,981
	40,000	40,800	39,992		40,800	39,992
×10	1,000	1,000	998	N	1,000	998
XIU	4,000	4,000	3,998	IN	4,000	3,998
x1	100	100	100	N	100	100
	400	400	399		400	399

3. Probe checked with Americium-241 (See notes, below)

Г		Approx.	Applied			
		source-to-	2-Pi	Back-		Average
	Analyzer	detector	emission	ground	Average	detection
	Switch	distance	rate	reading	reading	efficiency
	position	(in)	(cpm)	(cpm)	(cpm)	(%)
ſ	Ch-1	12	70,100	3,200	31,800	45
ſ	Out	12	70,100	7,000	31,000	44

4. Notes:

1. Source to Detector distance is the approximate distance from the surface of the test source to the surface of the detector's protective shield.

2. Applied rate is the sum of the certified 17keV and 60 keV emission rates from the AM-241 test source.

3. Background reading as observed on the unit under test at time of test.

4. Average reading is (average of one minute scaler count plus the analog meter reading) minus the local background at time of test

5. Geometry:



Report NumberW0MG4G-7026DCalibration Date25-Jan-01Calibration Due24-Jul-01

Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Bicron AnalystSerial No.:A951PBicron G5 DetectorSerial No.:A365Q

Submitted by:..... W0MG4G

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters.

The reference standard(s) for this calibration:

(1) AN/UDM-11 Calibration Set, Amerricium 241, (Am-241) source serial number EN468.

(2) Eberline Model MP2 mini Pulser, serial number 434.

The measurements were performed under ambient conditions of approximately 21 degrees Celcius and 40 percent relative humidity.

Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

T. E. DAVIS LRSO USATSC-Tobyhanna

CRAIG A. GREDLEIN Chief, ACL USATSC-Tobyhanna

Report NumberW0MG4G-7027DCalibration Date25-Jan-01Calibration Due24-Jul-01

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255

Bicron AnalystSerial No.A951PBicron G5 DetectorSerial No.A365Q

Unless otherwise noted, all listed test results were obtained with the Analyzer switch set to "Ch 1".

1. Basic performance data:

1

High Voltage (kV):	1.24	Lower Level Discriminator (mV): 50
Sensitivity (mV):	98	Upper Level Discriminator (mV): 149
Batteries:	Replaced 1 ea. 9 volt	battery

2. Meter Accuracy when electronically pulsed (scaler reading are 1 minute counts)

	Applied	Initial Readings		Adjusted?	Final Readings	
Range	(cpm)	Meter	Scaler	(Y/N)	Meter	Scaler
×1000	100,000	95,000	99,869	N	95,000	99,869
X1000	400,000	422,000	399,740		422,000	399,740
×100	10,000	9,500	9,985	N	9,500	9,985
	40,000	40,500	3 9 ,933	14	40,500	39,933
x10	1,000	980	998	N	980	998
	4,000	4,100	3,994		4,100	3,994
x1	100	95	100	N	95	100
	400	400	400	14	400	400

3. Probe checked with Americium-241 (See notes, below)

	Approx.	Applied			
	source-to-	2-Pi	Back-		Average
Analyzer	detector	emission	ground	Average	detection
Switch	distance	rate	reading	reading	efficiency
position	(in)	(cpm)	(cpm)	(cpm)	(%)
Ch-1	12	70,100	1,800	58,200	83
Out	12	70,100	9,000	66,000	94

4. Notes:

1. Source to Detector distance is the approximate distance from the surface of the test source to the surface of the detector's protective shield.

2. Applied rate is the sum of the certified 17keV and 60 keV emission rates from the AM-241 test source.

3. Background reading as observed on the unit under test at time of test.

4. Average reading is (average of one minute scaler count plus the analog meter reading) minus the local background at time of test

5. Geometry:

Report NumberW0MG4G-7027DCalibration Date25-Jan-01Calibration Due24-Jul-01

Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Bicron AnalystSerial No.:A983PBicron G5 DetectorSerial No.:A394Q

Submitted by:..... W0

W0MG4G

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters. The measurements were performed under ambient conditions of approximately 20 degrees Celcius and 40 percent relative humidity. Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

The reference standard(s) for this calibration:

(1) AN/UDM-11 Calibration Set, Amerricium 241, (Am-241) source serial number EN468.

(2) Eberline Model MP2 mini Pulser, serial number 434.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

T. E. DAVIS LRSO USATSC-Tobyhanna

CRAIG Á. GREDLEIN Chief, ACL USATSC-Tobyhanna

Report NumberWOMG4G-7021DCalibration Date20-Mar-01Calibration Due16-Sep-01

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255
Bicron Analyst Bicron G5 Detector

Serial No. A983P Serial No. A394Q

Unless otherwise noted, all listed test results were obtained with the Analyzer switch set to "Ch 1".

1. Basic performance data:

High Voltage (kV): 1.24	Lower Level Discriminator (mV): 51
Sensitivity (mV): 100	Upper Level Discriminator (mV): 194
Batteries: replaced 1 ea 9V	

2. Meter Accuracy when electronically pulsed (scaler reading are 1 minute counts)

	Applied	Initial Readings		Adjusted?	Final Readings	
Range	(cpm)	Meter	Scaler	(Y/N)	Meter	Scaler
×1000	100,000	98,000	99,971	N	98,000	99,971
×1000	400,000	420,000	399,615	14	420,000	399,615
×100	10,000	9,500	9,980	N	9,500	9,980
X100	40,000	39,900	39,900		39,900	39,900
×10	1,000	950	999	М	950	999
×10	4,000	4,000	3,999	IN	4,000	3,999
v1	100	98	100	N	98	100
	400	400	400		400	400

3. Probe checked with Americium-241 (See notes, below)

ſ		Approx.	Applied			
		source-to-	2-Pi	Back-		
	Analyzer	detector	emission	ground	Average	Average
I	Switch	distance	rate	reading	reading	detection
	position	(in)	(cpm)	(cpm)	(cpm)	efficiency
I	Ch-1	12	70,100	3,400	69,400	0.99
	Out	12	70,100	9,800	70,000	1.00

4. Notes:

1. Source to Detector distance is the approximate distance from the surface of the test source to the surface of the detector's protective shield.

2. Applied rate is the sum of the certified 17keV and 60 keV emission rates from the AM-241 test source.

3. Background reading as observed on the unit under test at time of test.

4. Average reading is (average of one minute scaler count plus the analog meter reading) minus the local background at time of test

5. Geometry:

Report NumberWOMG4G-7021DCalibration Date20-Mar-01Calibration Due16-Sep-01

CERTIFICATE OF CALIBRATION (COUNT-RATE INSTRUMENT)

RSA Laboratories, Inc.

21 Pendleton Drive, P.O. Box 61 Hebron, Connecticut 06248 (860) 228-0721 Fax (860) 228-4402

Customer and Contact: Radiation Safety Associates, Inc. Attn: K. Paul Steinmeyer (860) 228-0487						
Last Mer Blocks T. C. Dox 107, 12 Tentition Diric, 11 Rei Outro					Inct o/n 1	110915
Inst. Mir. & Model Lud	num Model 2224	1 Det Tree	Scaler/Ratemeter		1 nst. s/n	119013
Det. Mfr. & Model Lud	lum Model 43-1-	Det. Type	Alpha/Beta Phoswi	ch	Det. s/n]	155183
Cal. Date 30 May 2001		Due Date 3	0 November 2001		Cal. Inter	val 6 months
Environmental conditions: Ter Pre-calibration Checks:	mperature: 71°F Ro	elative Humidity 38% A	tmospheric Pressure 29.	22 inches Hg		
Contamination survey	Battery che	eck	□ Slow response check			
Mechanical check	Audio chec	ck	Window operation		🛚 Det. volts	s 775 Vdc
Meter zero	B Reset chec	k	🛚 Plateau check			
🛚 Geotropism check	Fast response	nse check	🗆 Alarm set		🛚 Input sen	s. *See comments
■ Pulse generator s/n 94926 ■ HV Readout (2 points) Ref	f./Inst. 900 ∨/ 900 ∨	□ Oscilloscope s/n 171-0 Ref./Inst. 1700 V/ 1700	4928 ■ Vol V	tmeter s/n 574	10002	
.ocal background ≈ 1 cpm alpha, 316 cpm beta. S/N of source used for precision check 0210 Isotope Th-230 Dedicated Source? □Yes ■No Reading #1 5,484 cpm Reading #2 5,401 cpm Reading #3 5,454 cpm Mean 5,446 cpm						
Precision: ■±<10% □±10	-20% Dut of tolera	nce	I			
Range Multipi	ler	Reference Calibr	ation Point		Instrument Ind	lication
x 1000		400,000 c	pm		400,000 cp	·m
x 1000		100,000 c	100,000 cpm		100,000 cpm	
x 100		40,000 c	40,000 cpm		40,000 cpm	
x 100		10,000 c	cpm		10,000 cpm	
x 10		4000 cp	pm		4000 cpm	
x 10		1000 ср	m		1000 срп	1
x 1		400 cpr	n		400 cpm	
x 1		100 cpr	n		100 cpm	*
1 mln count		100,000 c	pm		100,042 cp	m
All ranges calibrated electronic	ally.					
Range Mulliplier	Cal. Source Us	ed (isolope and S/N)	Source Activity (dpm)	Instrur	nent Reading (cpm)	4# Instrument EMclency (%)
1 min. count	C-1	14 #4456	202,100	11	1 (α) ,093 (β)	0.00% 5.3%
1 mln. count	Pm-	-147 #5381	20,382	2	1 (α) ,098 (B)	0.00% 8.7%
1 min. count	Tc-	99 #D702	23,064		1 (a)	0.00%

4,319 (8) 17.4% 1 min. count Cs-137 #2886 19,191 1 (a) 0.00% 6,453 (8) 31.9% 1 mln. count C1-36 #D700 23,598 1 (a) 0.00% 8,101 (8) 32.9% 1 min. count Sr/Y-90 #D711 48,238 1 (α) 0.00% 17,220 (6) 35.0% 1 min. count Th-230 #91TH2200210 38,900 5,489 (a) 14.1% 1,105 (8) 2.0%

RSA Laboratories ID# 4956. Instrument indicates within $\pm 10\%$ of calibration points unless otherwise indicated. Source-to-detector entry window distance for efficiency determinations is 1 cm unless otherwise specified. RSA Laboratories, Inc. certifies that the above instrument has been calibrated with standards traceable to the National Institute of Standards and Technology, or have been derived from accepted values of natural physical constants, or have been derived by the ratio-type of calibration techniques.

Reviewed by: David L. Judd

Calibrated by: Paul R. Steinmeyer

al

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Date 30 May 2001 Date 30 MAY 2001



RSA Laboratories ID# 4956.

•

RSA Laboratories ID# 4950. Calibrated by: Paul R. Steinmeyer Paul R. A Dalla Ludd De Lalla Date 30 MAY 2001 Date 30 MAY 2001

CERTIFICATE OF CALIBRATION (COUNTER/SCALER)

RSA Laboratories, Inc.

19 Pendleton Drive, P.O. Box 61 Hebron, Connecticut 06248 (203) 228-0721 Fax (203) 228-4402

Customer and Contact: Radia Customer Address: P.O. Box	tion Safety Associate 107, 19 Pendleton I	es, Inc. Attn: K. Paul Ste Drive, Hebron, CT 06248	inmeyer (860) 22	28-0487
Inst. Mfr. & Model Ludlum	Model 2224	Inst. Type Scaler Ratemet	er	Inst. s/n 119803
Det. Mfr. & Model Ludlum Model 43-1-1		Det. Type Alpha/Beta Pho	oswich 🛛	Det. s/n 166008
Cal. Date 30 May 2001		Due Date 30 November 2001		Cal. Interval 6 months
Environmental conditions: Temperat Pre-calibration Checks:	ture: 66°F Relative Hur	nidity 42 % Atmospheric Pressur	e 29.23 inches Hg	
Contamination survey	🛚 Battery check	□ Slow response c	heck	
B Mechanical check	Audio check	B Window operation	on	🛚 Det. volts 675 Vdc
🛚 Meter zero	Reset check	🛚 Plateau check		
Geotropism check	□ Fast response check	Alarm set	I	Input sens. *See comments
■Pulse generator s/n 94926	D Oscillo	scope s/n 171-04928	Voltmeter s/n 57410	0002
BHV Readout (2 points) Ref./Inst.	500 V/500 V Ref./Inst.	1000 V/ 1000 V		

Comments: 'Alpha threshold = 120 mV; Beta threshold = 4 mV; Beta window = 4 mV to 30 mV. Local background ≈ 1 cpm α , 261 cpm β .

S/N of source used for precision check 0210 Isotope Th-230 Dedicated Source? □Yes ■No Reading #1 5,413 cpm Reading #2 5,355 cpm Reading #3 5,451 cpm Mean 5,406 cpm Precision: $\blacksquare \pm < 10\%$ $\Box \pm 10-20\%$ \Box Out of tolerance **Range Multiplier Reference Calibration Point** Instrument Indication x 1K 400,000 cpm 400,000 cpm x 1K 100,000 срт 100,000 cpm 40,000 cpm x 100 40,000 cpm 10,000 cpm x 100 10,000 cpm 4,000 cpm 4,000 cpm x 10 x 10 1,000 cpm 1,000 срш 400 cpm x 1 400 cpm 100 cpm x 1 100 cpm 1 min. x 1 5,000 cpm (5,000 counts) 5,003 counts

All ranges calibrated electronically.

Range Muttiplier	Cal. Source Used (Isotope and S/N)	Source Activity (dpm)	Instrument Reading (cpm)	4≢ Instrument Efficiency (%)
1 min. couni	C-14 #4456	202,100	1 (α) 6,611 (β)	0.00% 3.1%
1 min. count	Pm-147 #5381	20,382	1 (α) 1,495 (δ)	0.00% 6.1%
1 min. count	Тс-99 #D702	23,064	1 (α) 3,357 (β)	0.00% 13.4%
1 min. count	Cs-137 #2886	19,191	1 (α) 6,021 (β)	0.00% 30.0%
1 mln. count	CI-36 #D700	23,598	1 (α) 7,884 (β)	0.00% 32.3%
1 min. count	Sr/Y-90 #D711	48,238	2 (α) 16,532 (β)	0.00% 33.7%
1 min. count	Th-230 #91TH2200210	38,900	5,211 (α) 1405 (β)	13.3% 2.9%

RSA Laboratories 1D# 4955. Instrument indicates within $\pm 10\%$ of calibration points unless otherwise indicated. Source-to-detector entry window distance for efficiency determinations is 1 cm unless otherwise specified. RSA Laboratories, 1nc. certifies that the above instrument has been calibrated with standards traceable to the National Institute of Standards and Technology, or have been derived from accepted values of natural physical constants, or have been derived by the ratio-type of calibration techniques.

Calibrated by: Paul R. Steinmeyer

Reviewed by: David L. Judd

Date 30 May 20-1 Date 30 May 200



Interpolated Beta Efficiencies 30 May 2001 Ludium Model 2224 #119803



	Designer ¹ and Manu of Scientific and Ind Instruments	facturer ustrial Cl	ERTIFICATE OF C.	AUBRATION	LUDLU POST OF 501 OAK SWEETWA	M MEASUREA FICE BOX 810 P STREET FA	AENTS, INC. H. 915-235-5494 AX NO. 915-235-4672 S, U.S.A.
CUSIOM	ER JENEGA ARMI	DEPOI				ORDER NO.	247030/240404
`*f g	Ludium Measure	ments, Inc. N	Model	2360	Serial	No	6
.9	Ludium Measure	ments. Inc. N	10del	43-37	Serial	No	H98
Cal. Dat	e14-Nov	<u>-00</u> Cal D	ue Date	14-Nov-01	_ Cal. Interval	<u>) Year</u> Meter	face <u>202-855</u>
Check ma	rk 🗹 applies to appli	cable instr. and/or	detector IAW mfg. spe	c. ĩ. <u>7</u>	<u>6 °F RH</u>	<u>40</u> % Al	t 692.8_ mm Hg
🗌 New	Instrument Instrum	ent Received	Within Toler. +-10%] 10-20% [] Out	of Tol. 🗌 Requirir	ng Repair 🔲 Ott	her-See comments
Mec F/S R Audi	hanical ck. Jesp. ck o ck. rated in accordance	Meter Zero	ed [ng.ck.] av 12/05/89. [] Background Sul] Window Opera] Batt. ck. (Min. V] Calibrated in ac	otract lion olt)VD cordance with LM	☐ Input Ser ☑ Geotrop C I SOP 14.9 rev 12/ Threshold	ns. Linearity ism 19/89.
Instrument	Vott Set1675	_ V Input Sens. <u>C</u>	omments mV Det. Op	er. <u>1675</u>	V at <u>Comments</u> r	nV Dial Ratio_	
Ы. Н	V Readout (2 points)	Ref./Inst	503 1	<u>500</u> V	Ref./Inst. /	5001	1500 V
Firmwar Alpha Beta Overloa Instrum High vo	Threshold: Threshold: Threshold: eta Window: ad checked,but r ment calibrated oltage set with	$\frac{2}{2} \frac{1}{2} \frac{1}$	(E Use Alp Bet A/E able. M23 connected. Cal	EPROM Setting r Time: 002.1 ha Alarms: 99 a Alarms: 999 Alarms: 999 60 Date: <u>/</u> ibration Date	gs:) 5 min. 99999cpm 9999cpm ///2000_ a:///2000_	L	
Gemme Calibra	tion: GM detectors positioned p	arpendicular to source excep	t for M 44-9 in which the front of	probe faces source.		·····	
		RI	EFERENCE	INSTRUM	AENT REC'D	INSTRUME	
	KANGE/MULIIPI	IER C	AL POINT	AS FOU	ND READING	MEIER RE	
	<u></u>	100	com		400		///
	X1000	40k	com	<u></u>	400		100
	X100	10	com		100		100
	X10	4	com		400	4	400
	<u>X10</u>		cpm		/00		100
	<u>X1</u>	400	cpm		400	. <u></u>	900
	XI	100	cpm		7.00		00
			· · · · ·				
	"Uncertainty within ± 105	6 C.F. within ± 20%			A	LL Range(s) Cal	ibrated Electronically
	REFERENCE	INSTRUMENT	INSTRUMENT	REFER	ENCE II	NSTRUMENT	INSTRUMENT
Disited	CAL. POINI	RECEIVED	METER READING	CAL		ECEIVED	MEIER READING
Readout	400kcpm_	40040 0	40040 (0)	Scale			
	40kcpm	4005	4005			<u></u>	
		400	400	· · · · ·	<u> </u>	······································	
	400cpm_	<u> </u>	<u> </u>				
	40Cp111						
- Lucium Mec: other Internat The collocation	surements, inc., certifies that i tional Standards Organizatio on system conforms to the ner	he above instrument has n members, or have bee subernants of ANSI/NCSI	been calibrated by standar h derived from accepted va 7540-1-1994 and ANSI NS23-1	ts traceable to the Nati Jues of natural physical 1978	onal Institute of Standar constants or have been S	ds and Technology, or derived by the ratio h trate of Texas Calib	to the calibration facilities of pe of calibration techniques ration License No. 10-19;
Referen	ce instruments and	/or Sources:	Loav (-1774 Grid Arist 1625-1	//0			
Ci-137 Ga	mma S/N 1162	G112 M565	5105 T1008 T879	E552 E551		Пи	eutron Am-241 Be S/N T<
Alp	ha S/N Pu2	9#8743 [Beta S/N	9#NI-EV.\$190Y90#4	1016 🗌 Othe	er	
🗹 m 🕄	500 S/N708		Oscilloscope S/N_		🗹 Mult	imeter S/N	61730074
Calibrat	ed By: Jour W	Jarting			_ Date	Nov - 00	
-		11.			. 15.1		
Reviewe	ed By: hand	Mani			Date <u>ISN</u>	B100	·
FORM C22	cate shall not be reproduced A 12/29/1999	except in full, without th	e written approval of Ludium	Measurements, Inc.	🗌 Passe	d Dielectric (Hi-Pot) and Continuity Test

.



Bench Test Data For Detector

Detector 43-37 Serial No PR / 3644	Order #. 249050/248464
Customer SENECA ARMY DEPOT	Alpha Input Sensitivity /00 mV
Counter 2360 Serial No / 38 2.56	Beta Input Sensitivity mV
Count Time_1Minute	Beta Window ∮ℓ m∨
Other	Distance Source to Detector

High	Backg	ground	_ Isotope _ Size	<u>Ри 239</u> 12.8К серт	Isotope Size	<u>1699</u> 14.1 Kcpm	Lsotope Size	5790 190 47,4260pm
Voltage	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta
11,25	3	444	4224	783	4	6720	7	15118
1650	/	543	4618	817	S	7611	4	18106
1475 44 10	_2	491	4877	593	12	7886	15	20758
1700	4	792	5033	1230	24	7578	82	554
		*						
				<u> </u>				

□ Gas Proportional detector count rate decreased ≤ 10% after 15 hour static test using 39" cable.

🖱 Gas proportional detector count rate decreased 🛛 ≤ 10% after 5 hour static test using 39" cable and alpha/beta counter.

Signature Join marting

Date <u> /S- 1000-00</u>

Serving The Nuclear Industry Since 1962 •



U. S. ARMY TMDE SUPPORT CENTER ATTN: AMSAM-TMD-A-T 11 HAP ARNOLD BLVD TOBYHANNA, PA 18466-5104

Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Bicron Micro-Rem, ser. No.: ... C252A Submitted by: W0MGAA

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters. The measurements were performed under ambient conditions of approximately 20 degrees Celcius and 40 percent relative humidity. Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

The reference standard(s) for this calibration:

(1) J.L. Shepherd model 89-400 Self containied Gamma calibration range, Cs-137, 0.662 meV Gamma

(2) Eberline Model MP2 mini Pulser, serial number 434.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

T. E. DAVIS LRSO USATSC-Tobyhanna

CRAIG A. GREDLEIN Chief, ACL USATSC-Tobyhanna

Report NumberW0MGAA-7011DCalibration Date20-Mar-01Calibration Due16-Sep-01

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255

C252A

1. Basic performance data:

1

.

High Voltage (kV):	Window: N/A
Sensitivity (mV):	Check Source: N/A
Batteries: OK	

2. Gamma Detection - Radio Isotope: Cesium-137 (Cs-137)

2. Gamma	2. Gamma Detection - Radio Isotope: Cesium-137 (Cs-137)						
			Initial		Final		
	Applied		Reading	Adjust	Reading		Avg.
Range	(uR)	Pulser?	(uR)	(Y/N)	(uR)	Efficiency	Efficiency
v0 1	4	Y	3.70	V	3.8	0.95	0.08
×0.1	16	Y	15.5		16.0	1.00	0.90
v1	40	Y	38.0	~	40.0	1.00	1.00
	160	N	152	1	160	1.00	1.00
×10	500	N	500	N	500	1.00	1.02
~10	1,500	N	1.550		1,550	1.03	1.02
v100	5,000	N	4,700	N	4,700	0.94	0.07
~100	15,000	N	15,000	11	15,000	1.00	0.97
×1000	50,000	Ň	49,000	N	49,000	0.98	0.00
~1000	150,000	N	150,000	IN	150,000	1.00	0.99

С

3. Geometry:



Report Number W0MGAA-7011D Calibration Date 20-Mar-01 Calibration Due 16-Sep-01

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U. S. ARMY TMDE SUPPORT CENTER ATTN: AMSAM-TMD-A-T 11 HAP ARNOLD BLVD TOBYHANNA, PA 18466-5104

Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Bicron Micro-Rem, ser. No.: ... C251A Submitted by: W0MG4G

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters. The measurements were performed under ambient conditions of approximately 20 degrees Celcius and 40 percent relative humidity. Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

The reference standard(s) for this calibration:

- (1) J.L. Shepherd model 89-400 Self containied Gamma calibration range, Cs-137, 0.662 meV Gamma
- (2) Eberline Model MP2 mini Pulser, serial number 434.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

T. E. DAVIS LRSO USATSC-Tobyhanna

CRAIG A. GREDLEIN Chief, ACL USATSC-Tobyhanna

Report NumberW9MG4G-7024DCalibration Date20-Mar-01Calibration Due16-Sep-01

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255

C251A

1. Basic performance data:

High Voltage (kV):	Window: N/A
Sensitivity (mV):	Check Source: N/A
Batteries: OK	

2. Gamma Detection - Radio Isotope: Cesium-137 (Cs-137)

	Applied		Initial	Adjust	Final		Ava
_	Applied		Reading	Aujust	(UD)	IT AFT - 1 - 1 - 1 - 1	Avy.
Range	(uR)	Pulser?	(uR)	(Y/N)		Efficiency	Efficiency
×0.1	4	Y	3.40	Y	3.6	0.90	0 98
X 0.1	16	Y	16.1		16.8	1.05	0.30
×1	40	Y	39.0	N	39.0	0.98	1 02
	160	N	169		169	1.06	1.02
×10	500	N	440	~	480	0.96	1 01
	1.500	N	1,450	1	1,580	1.05	1.01
×100	5,000	N	4,300	~	4,800	0.96	1 0 1
2100	15,000	N	14,300	I	15,800	1.05	1.01
×1000	50,000	N	47,000	N	47,000	0.94	0 00
×1000	150,000	N	156,000	IN .	156,000	1.04	0.99



Report NumberW9MG4G-7024DCalibration Date20-Mar-01Calibration Due16-Sep-01

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U. S. ARMY TMDE SUPPORT CENTER ATTN: AMSAM-TMD-A-T 11 HAP ARNOLD BLVD TOBYHANNA, PA 18466-5104

Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Ludlum model 3, serial number: 61457 with 44-9 G-M detector, s/n: PR026657

Submitted by W0MG4G

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters.

The reference standard(s) for this calibration:

- (1) J.L. Shepherd model 89-400 Self containied Gamma calibration range, Cs-137, 0.662 meV Gamma
- (2) AN/UDM-6 Radiac Calibrator, Pu-239, 5.16 MeV Alpha.
- (3) Ludlum model 500 Pulser, serial number 87219.

The measurements were performed under ambient conditions of approximately 20 degrees Celcius and 40 percent relative humidity.

Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

T. E. DAVIS LRSO USATSC-Tobyhanna

CRAIG A. GREDLEIN Chief, ACL USATSC-Tobyhanna

Report NumberW0MG4G-7015DCalibration Date03-Apr-01Calibration Due30-Sep-01

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255 .

Ludlum model 3, serial number:

61457

Instrument Parameters:

High Voltage (kV) =	0.72	Batteries: OK
Sensitivity (mV) =	26	Window: fixed open
Check Source =	n/a	

Gamma Detection - Radio Isotope: Cesium-137 (Cs-137)

			Initial		Final		
-	Applied		Reading	Adjust	Reading		
Range	(mR)	Pulser?	(mR)	(Y/N)	(mR)	Efficiency	Avg.Eff.
× 0.1	0.05	Y	0.058	V	0.050	1.00	1.00
X 0.1	0.15	Y	0.165	1	0.150	1.00	1.00
× 1.0	0.5	N	0.600	Y	0.500	1.00	1.00
X 1.0	1.5	N	1.70		1.50	1.00	
× 10	5	N	5.20	V	5.10	1.02	1.01
x 10	15	N	15.8	T	15.0	1.00	1.01
× 100	50	N	60.0	V	50.0	1.00	1.00
X 100	150	N	170	T	150	1.00	1.00

Alpha Detection - Radio Isotope: Plutonium-239 (Pu-239)

			Initial		Final		
	Applied		Reading	Adjust	Reading		
Range	(cpm)	Pulser?	(cpm)	(Y/N)	(cpm)	Efficiency	Avg.Eff.
× 0.1	516	N	110	N	110	0.21	0.20
X 0.1	1,359	N	250	IN	250	0.18	0.20
× 1 0	5,900	N	1,000	N.	1,000	0.17	0.17
X 1.0	15,527	N	2,600	IN IN	2,600	0.17	0.17
v 10	62,342	N	13,000	N	13,000	0.21	0.20
X 10	164.058	N	31,000	IN IN	31,000	0.19	0.20
× 100	564,099	N	95,000	N	95,000	0.17	0.14
x 100	1,484.472	N	175,000	IN	175,000	0.12	0.14

NOTE: Do not use for quantitive Alpha measurements.

Geometry:

 $\sim \sim$

Report NumberW0MG4G-7015DCalibration Date03-Apr-01Calibration Due30-Sep-01

U. S. ARMY TMDE SUPPORT CENTER ATTN: AMSAM-TMD-A-T 11 HAP ARNOLD BLVD TOBYHANNA, PA 18466-5104

Area Secondary Nucleonics Laboratory Report of Calibration for Radiac Set/Survey Meter

Ludlum model 3, ser. no.: 61390 with 44-9 detector, ser. no.: PR019247

Submitted by W0MG4G

This instrument was calibrated in accordance with TB9-6665-285-15, Army Calibration Program for Radiac Meters.

The reference standards for this calibration are:

- (1) J.L. Shepherd model 89-400 Self containied Gamma calibration range, Cs-137, 0.662 meV Gamma
- (2) AN/UDM-6 Radiac Calibrator, Pu-239, 5.16 MeV Alpha.
- (3) Ludlum model 500 Pulser, serial number 87219.

The measurements were performed under ambient conditions of approximately 20 degrees Celcius and 40 percent relative humidity.

Calibration uncertainty, including measurement errors and accuracy of reference standards, is estimated to be +/- 10%.

This calibration is traceable to and compatible with National Institute of Standards and Technology (NIST) measurements.

E DAVIS

LRSO USATSC-Tobyhanna

CRAIG A. GREDLEIN Chief, ACL USATSC-Tobyhanna

Report NumberW0MG4G-7017DCalibration Date30-Jan-01Calibration Due29-Jul-01

Phone numbers: DSN 795-7820/7255 Comm (570) 895-7820/7255

Instrument Parameters:

High Voltage = 0.90 kV	Batteries: ok
Sensitivity = 24 mV	Window: fixed open
Check Source = n/a	

Gamma Detection - Radio Isotope: Cesium-137 (Cs-137)

	Applied		Initial	Adjust	Final	Corr.	
Range	(mR)	Pulser?	Reading	(Y/N)	Reading	Factor	Avg C.F.
× 0.1	0.05	Y	0.052	N	0.052	0.96	0.08
x 0.1	0.15	Y	0.150		0.150	1.00	0.90
×10	0.5	N	0.52	N	0.52	0.96	0.08
X 1.0	1.5	N	1.50	IN	1.50	1.00	0.90
× 10	5	N	5.2	N	5.2	0.96	0.00
XIU	15	N	14.7	IN	14.7	1.02	0.99
× 100	50	N	50	N	50	1.00	0.94
x 100	150	N	170	(N	170	0.88	0.94

Alpha Detection - Radio Isotope: Plutonium-239 (Pu-239)

			Initial		Final	Alpha	Avg.
	Applied		Reading	Adjust	Reading	Efficiency	Efficiency
Range	(cpm)	Pulser?	(cpm)	(Y/N)	(cpm)	(%)	(%)
v 0 1	516	N	110	NI	110	21	10
X U. I	1,359	N	240	IN	240	18	19
	5,900	Ň	1,100	N	1,100	19	17
X 1.0	15,527	N	2,500		2,500	16	17
× 10	62,342	N	12,000	N	12,000	19	19
X 10	164,058	N	28,000		28,000	17	10
v 100	564,099	N	90,000	N	90,000	16	12
x 100	1,484,472	N	150,000	IN	150,000	10	15

NOTE: Do not use for quantitive Alpha measurements.

Geometry:

~~~**>** 

Report NumberW0MG4G-7017DCalibration Date30-Jan-01Calibration Due29-Jul-01

## APPENDIX N

| Instrument Type | Serial |
|-----------------|--------|
|                 | Number |
| FIDLER          | A945P  |
| FIDLER          | .4954P |
| FIDLER          | .4968P |
| FIDLER          | A951P  |
| FIDLER          | A983P  |
| Phoswich        | 119815 |
| Phoswich        | 119803 |
| Floor Monitor   | 138256 |
| Micro Rem       | C252.4 |
| Micro Rem       | C251A  |
| Pancake         | 61457  |
| Pancake         | 61390  |

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Instrument Source Check Sheets(by Instrument)- Phase II

## SENECA ARMY DEPOT SEAD-12 RI/FS 6/5/01

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| Site: Seneca Army Depot |                 |                 |
|-------------------------|-----------------|-----------------|
| Project: SEAD-12        |                 |                 |
| Team:                   |                 |                 |
|                         | Page 1 of 59    |                 |
| Instrument Type         | Bicron Fidler   | Bicron Fidler   |
| АКА                     | Fidler          | 💷 👘 Fidler 💷 🏟  |
| Make                    | Bicron          | Bicron          |
| Model                   | Analyst         | Analyst         |
| Serial Number           | A945P           | A945P           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 11/21/2001      | 11/21/2001      |
| Probe                   | Nal Scintilator | Nal Scintilator |
| Make                    | Bicron          | Bicron          |
| Model                   | G-5             | G-5             |
| Serial Number           | A365Q           | A365Q           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 11/21/2001      | 11/21/2001      |
| Source                  | Am-241          | Am-241          |
| Source type             | Low E gamma     | Low E gamma     |
| Calibration Date        | 4/10/2001       | 4/10/2001       |
| Out of Cal Date         | 3/31/2003       | 3/31/2003       |
| Serial Number           | 8920            | 8920            |
| Source emission rate    | 254925 dpm      | 254925 dpm      |
| Instrument Channel      | Channel 1       | Out             |
| instrument efficiency   | 0.20%           | 9.50%           |
| 2 Sigma Range           | 766-879         | 4650-7721       |
| 3 Sigma Range           | 738-907         | 3882-8488       |

710420 Rm 7127101

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PARSONS MAIN, INC.

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A945 P-Ch. | PARSONS

| CLIENT                                                         |                                                              | JOB NO SHEET 2 OF 59<br>BY DATE 66 04 01<br>CKD REVISION |
|----------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------|
| erin INSTRUMENT: A945<br>S/N: A945P -<br>Ch.1                  | P FIDLER<br>SET W/ SMALL                                     | 2:45 PM<br>WINDOW                                        |
| BACICGROUND<br>1 338<br>2 344<br>3 299<br>4 298 Floor<br>5 393 | SOURC<br>6/5/01<br>1 505<br>2 5/8<br>3 528<br>4 537<br>5 524 | E TYPE: Am-241<br>0910 S/N: 8920                         |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$          | $\begin{array}{cccccccccccccccccccccccccccccccccccc$         | 73at=0K<br>HU=0K                                         |
| Avg = 346.6<br>$\sigma = 18.6$                                 | Aug. = 526<br>cr = 23                                        | - source upside down<br>- NU good,<br>redo 616/01        |
| $   \begin{array}{ccccccccccccccccccccccccccccccccccc$         | 284<br>365<br>354<br>325<br>318<br>296<br>293                | Aog = 306<br>v = 17                                      |

PARSONS MAIN, INC.

A945P- OUT



| <b>(</b> | CLIENT                                                    | JOB NOSHEET.3_OF_59<br>BY_JRH/AML_DATE_6/4/01<br>CKDREVISION      |
|----------|-----------------------------------------------------------|-------------------------------------------------------------------|
|          | NSTRUMENT : FIDLER<br>S/N: A945P                          | 3:00 PM<br>BATTERY: OK                                            |
|          | BACKGROUND - OUT CH.<br>1 5640<br>2 5213                  | SOURCE TYPE: Am-241<br>615/01 0910 5/N: 8926<br>1 5336<br>2 5377  |
| Ć        | $\begin{array}{cccccccccccccccccccccccccccccccccccc$      | $\begin{array}{cccccccccccccccccccccccccccccccccccc$              |
|          | Avg = 6088<br>$\sigma = 78.03$<br>TIG But upon the states | Ava = 5466 - no good.<br>- = 74 source ups. deduch<br>redo 6/6/01 |
| (.       | $\begin{array}{cccccccccccccccccccccccccccccccccccc$      | Aoq = 5026<br>cr = 71                                             |

PARSONS MAIN, INC.

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PARSONS

| CLIENT                                                | ~ 50°F                                                                                                  | јов NO<br>вуАМС<br>скр                                                                                                               | DATE 6/6/01<br>REVISION 0800-0830 |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Instrument."<br>O Redo co<br>Ch. 1                    | FIDLER A9457<br>source check with type-1                                                                | side down                                                                                                                            | 50000 Am-24<br>5/2: 8920          |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>2<br>3<br>4<br>15<br>11<br>12<br>3<br>14<br>15 | 6091<br>4143<br>6037<br>5841<br>5944<br>5947<br>5944<br>5967<br>5944<br>5954<br>5954<br>5937<br>5937<br>5937<br>5937<br>5994<br>6066 |                                   |
| Aug = 823<br>Un 2 29                                  | Ava =                                                                                                   | 2012                                                                                                                                 |                                   |

## SENECA ARMY DEPOT SEAD-12 RI/FS

## FIDLER Serial Number A945P/A378Q

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| DATE: 6 5 01                        |                   | PAGE 5 OF          | 59          | 1       |
|-------------------------------------|-------------------|--------------------|-------------|---------|
| Source                              |                   | Am-241             |             |         |
| Calibration Date                    | ( 1/0/1900        |                    |             |         |
| Out of Cal Date                     | 1/0/1900          |                    |             | 1       |
| Serial Number                       | 254025 dam        |                    |             |         |
| Source emission rate                | CHANNEL 1         | 254925 dpm         | 1           | 7       |
| High Voltage                        | 1.08              | 1.08               |             |         |
| Battery Check                       | initici fy church | a dure in vacuring |             | 1       |
| Source Check Reading (1)            |                   | 0                  |             | ]       |
| Source Check Reading (2)            |                   |                    | 3           |         |
| Source Check Reading (3)            |                   | KIV, 1A            | 1           |         |
| Source Check Reading (4)            |                   | Black.             | /           |         |
| Source Check Reading (5)            |                   |                    | /           |         |
| Source Check Reading (AVERAGE)      |                   |                    |             | 1       |
|                                     |                   |                    |             |         |
| Direct Background reading (1)       | initial fx clicok | dane in marining   | /           | 1.0     |
| Direct Background reading (2)       |                   | 0                  |             |         |
| Direct Background reading (3)       |                   |                    | 27          |         |
| Direct Background reading (4)       |                   | KUL Istel          | 7           |         |
| Direct Background reading (5)       |                   | Colour             | /           |         |
| Direct Background reading (AVERAGE) |                   |                    | /           |         |
| Efficiency = (CPM-Background) / DPM |                   |                    |             | EUK     |
| MID-DAY SOURCE READING              | not used in       | MIEVEN IN J        | Filt        |         |
| MID-DAY BACKGROUND READING          | not used in       | mpoznici) -        |             |         |
| EVENING SOURCE READING              | 524               |                    | Not used in | afbraon |
| EVENING BACKGROUND READING          | 296               | 5068               |             |         |
| Morning check performed by          |                   |                    |             |         |
| Mid-day check performed by          |                   |                    |             | KU      |
| Evening check performed by          | .jRL              | Jey                | MA          |         |
## FIDLER Serial Number A945P/A378Q

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| DATE: 616101 0855                   |           | PAGE 6 OF 59 |                       |  |  |
|-------------------------------------|-----------|--------------|-----------------------|--|--|
| Source                              | Am-241    |              |                       |  |  |
|                                     |           | 1/0/1900     |                       |  |  |
| Serial Number                       |           | 8920         |                       |  |  |
| Source emission rate                |           | 254925 dpm   |                       |  |  |
| Instrument Channel                  | CHANNEL 1 | OUT          |                       |  |  |
| High Voltage                        | 1.1       | 1.1          |                       |  |  |
| Battery Check                       | OK        | OK /         | 184                   |  |  |
| Source Check Reading (1)            |           |              | the for               |  |  |
| Source Check Reading (2)            |           | $\searrow$   | in the way            |  |  |
| Source Check Reading (3)            |           |              | Che M                 |  |  |
| Source Check Reading (4)            | /         |              | it l                  |  |  |
| Source Check Reading (5)            |           |              | N                     |  |  |
| Source Check Reading (AVERAGE)      |           |              |                       |  |  |
|                                     |           |              |                       |  |  |
| Direct Background reading (1)       | 319       | 5049         | $\backslash$          |  |  |
| Direct Background reading (2)       | 312       | 5044         | $\left \right\rangle$ |  |  |
| Direct Background reading (3)       | 330       | 5038         | 1 (FUR                |  |  |
| Direct Background reading (4)       | 267       | 5065         |                       |  |  |
| Direct Background reading (5)       | 318       | 5055         |                       |  |  |
| Direct Background reading (AVERAGE) | 309       | 5050         |                       |  |  |
| Efficiency = (CPM-Background) / DPM |           |              |                       |  |  |
| MID-DAY SOURCE READING              | 766       | 5188         |                       |  |  |
| MID-DAY BACKGROUND READING          | 295       | 4981         |                       |  |  |
| EVENING SOURCE READING              | EN \$ 817 | EM 5856      |                       |  |  |
| EVENING BACKGROUND READING          | 292       | 5112         | / KUX                 |  |  |
| Morning check performed by          | ALOSE     | Mose         |                       |  |  |
| Mid-day check performed by          | Marl      | ALOUR        |                       |  |  |
|                                     | C A A     | C I IAA      |                       |  |  |

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FIDLER Serial Number A945P/A378Q

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| DATE: 6-7-01                        | PAGE 7 OF 59     |                |            |
|-------------------------------------|------------------|----------------|------------|
| Source                              | Am-241           |                |            |
| Out of Cal Date                     |                  | 3/31/2003      |            |
| Serial Number                       |                  | 8920           |            |
| Source emission rate                |                  | 254925 b/min + | or Ch 1 71 |
| Instrument Channel                  | CHANNEL 1        | OUT            |            |
| High Voltage                        | 1.0 <sup>6</sup> | 1.0            |            |
| Battery Check                       | OK               | oK             |            |
| Source Check Reading (1)            | 872              | 6239           |            |
| Source Check Reading (2)            | 832              | 6153           | D/         |
| Source Check Reading (3)            | 794              | 6019           |            |
| Source Check Reading (4)            | 865              | 6284           |            |
| Source Check Reading (5)            | 811              | 6130           | /          |
| Source Check Reading (AVERAGE)      | 835              | 6165           |            |
|                                     |                  |                |            |
| Direct Background reading (1)       | 267              | 53/3           |            |
| Direct Background reading (2)       | 330              | 5195           |            |
| Direct Background reading (3)       | 286              | 5176           | , M        |
| Direct Background reading (4)       | 333              | 5252           |            |
| Direct Background reading (5)       | 321              | 5200           |            |
| Direct Background reading (AVERAGE) | 307              | 5227           | -          |
| Efficiency = (CPM-Background) / DPM | 0,21%            | 0.37%          | 0,13%      |
| MID-DAY SOURCE READING              | 785              | 5965           | /          |
| MID-DAY BACKGROUND READING          | 296              | EM \$154       |            |
| EVENING SOURCE READING              | Em 145           | EM 6006        | Y          |
| EVENING BACKGROUND READING          | 296              | 5014           | 2/         |
| Morning check performed by          | EKM              | EKM            |            |
| Mid-day check performed by          | Exm              | EKM            |            |
| Evening check performed by          | ERM              | EILM           | / -        |

### FIDLER Serial Number A945P/A378Q

| DATE: 6-8-01                        | PAGE & OF 59       |            |         |
|-------------------------------------|--------------------|------------|---------|
| Source                              | Am-241             |            |         |
| Calibration Date                    | 1/0/1900           |            |         |
| Out of Cal Date                     | 1/0/1900 chancel 1 |            |         |
| Serial Number                       |                    | 254025 dpm | 2:04001 |
| Instrument Channel                  | CHANNEL 1          | OUT        | 104000  |
| High Voltage                        | 1.1                | 1.1        | /       |
| Battery Check                       | OK                 | OK         |         |
| Source Check Reading (1)            |                    | 6290       |         |
| Source Check Reading (2)            |                    | 6209       |         |
| Source Check Reading (3)            |                    | 6045       |         |
| Source Check Reading (4)            | $\setminus 2/$     | 6165       | /       |
| Source Check Reading (5)            |                    | 6237       | /       |
| Source Check Reading (AVERAGE)      |                    | 6189       |         |
|                                     |                    |            |         |
| Direct Background reading (1)       | $\land$            | 5248       |         |
| Direct Background reading (2)       |                    | 5121       |         |
| Direct Background reading (3)       |                    | 5189       | JV/     |
| Direct Background reading (4)       |                    | 5137       | ¥.      |
| Direct Background reading (5)       |                    | 5073       |         |
| Direct Background reading (AVERAGE) |                    | 5154       | V       |
| Efficiency = (CPM-Background) / DPM |                    | 20.417. e  | 0,15%   |
| MID-DAY SOURCE READING              |                    | 6034       |         |
| MID-DAY BACKGROUND READING          |                    | 4923       |         |
| EVENING SOURCE READING              |                    | 6021       | V       |
| EVENING BACKGROUND READING          |                    | 5113       | N       |
| Morning check performed by          |                    | EKM        | 7       |
| Mid-day check performed by          |                    | EKM        |         |
| Evening shock performed by          | /                  | 1216       | /       |

## FIDLER Serial Number A945P/A378Q

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| DATE: 6-9-01                        | PAGE 9 OF 59 |            |              |  |
|-------------------------------------|--------------|------------|--------------|--|
| Source                              | Am-241       |            |              |  |
| Calibration Date                    | 1/0/1900     |            |              |  |
| Serial Number                       |              | 8920       |              |  |
| Source emission rate                |              | 254925 dpm | Far (h1 7104 |  |
| Instrument Channel                  | CHANNEL 1    | OUT        |              |  |
| High Voltage                        |              | 1.1        |              |  |
| Battery Check                       |              | ØK         |              |  |
| Source Check Reading (1)            |              | 6221       |              |  |
| Source Check Reading (2)            |              | 6180       | M            |  |
| Source Check Reading (3)            | 14           | 6246       | 4/           |  |
| Source Check Reading (4)            |              | 6236       |              |  |
| Source Check Reading (5)            | //           | 6090       |              |  |
| Source Check Reading (AVERAGE)      | X            | 6195       |              |  |
|                                     |              |            |              |  |
| Direct Background reading (1)       |              | 5216       |              |  |
| Direct Background reading (2)       |              | 5151       |              |  |
| Direct Background reading (3)       |              | 5158       | , Nr/        |  |
| Direct Background reading (4)       |              | 5195       | Y            |  |
| Direct Background reading (5)       |              | 5054       |              |  |
| Direct Background reading (AVERAGE) |              | 5155       | /            |  |
| Efficiency = (CPM-Background) / DPM |              | D.417. 8   | 0,15%        |  |
| MID-DAY SOURCE READING              |              | 6008       |              |  |
| MID-DAY BACKGROUND READING          |              | 5081       |              |  |
| EVENING SOURCE READING              |              | 5869       | Y            |  |
| EVENING BACKGROUND READING          |              | 5031       | 2            |  |
| Morning check performed by          |              | EKM        |              |  |
| Mid-day check performed by          |              | EKM        |              |  |
| Evening check performed by          |              | EKM        |              |  |

FIDLER Serial Number A945P/A378Q

| DATE:           | 10-10-01                                                                                                        |             | PAGE 10 O         | F 59       |  |
|-----------------|-----------------------------------------------------------------------------------------------------------------|-------------|-------------------|------------|--|
| Source          |                                                                                                                 |             | Am-241            |            |  |
| Calibration Da  | ate                                                                                                             |             | 1/0/1900          |            |  |
| Out of Cal Da   | te                                                                                                              |             | 1/0/1900 for Ch'1 |            |  |
| Serial Numbe    | r<br>ion roto                                                                                                   |             | 8920              | 7.0        |  |
| Instrument Ch   | nannel                                                                                                          | CHANNEL 1   | OUT               | 119499 60. |  |
| High Voltage    |                                                                                                                 |             | 1.1               | /          |  |
| Battery Check   | <                                                                                                               |             | σK                |            |  |
| Source Check    | Reading (1)                                                                                                     |             | 6266              |            |  |
| Source Check    | Reading (2)                                                                                                     |             | 6225              | ¥          |  |
| Source Check    | Reading (3)                                                                                                     | 1 37        | 6200              |            |  |
| Source Check    | Reading (4)                                                                                                     |             | 6176              | +/         |  |
| Source Check    | Reading (5)                                                                                                     |             | 6653              | -/         |  |
| Source Check    | Reading (AVERAGE)                                                                                               |             | 6224              | 1/         |  |
|                 |                                                                                                                 |             |                   |            |  |
| Direct Backgro  | ound reading (1)                                                                                                |             | 5276              | /          |  |
| Direct Backgro  | ound reading (2)                                                                                                | X           | 5128              | /          |  |
| Direct Backgro  | ound reading (3)                                                                                                | $- \Lambda$ | 5160              | */         |  |
| Direct Backgro  | ound reading (4)                                                                                                | 1           | 5217              | ¥          |  |
| Direct Backgro  | ound reading (5)                                                                                                |             | 5198              |            |  |
| Direct Backgro  | ound reading (AVERAGE)                                                                                          |             | 5196              | /          |  |
| Efficiency = (C | CPM-Background) / DPM                                                                                           |             | 0.40 %            | 0,14%      |  |
| MID-DAY SOU     | JRCE READING                                                                                                    |             | 6002              |            |  |
| MID-DAY BAC     | KGROUND READING                                                                                                 |             | 5014              |            |  |
| EVENING SO      | URCE READING                                                                                                    |             | 5887              | W          |  |
| EVENING BA      | CKGROUND READING                                                                                                |             | 4997              | 2          |  |
| Morning check   | c performed by                                                                                                  |             | EKM               |            |  |
| Mid-day check   | c performed by                                                                                                  | /           | Jelt              | /          |  |
|                 | Contraction of the second s | /           | EVINA             |            |  |

### FIDLER Serial Number A945P/A378Q

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| DATE: 6/11/01                       | PAGE 11 OF 59                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |          |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| Source                              | Am-241                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |          |
| Calibration Date                    | 1/0/1900                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |          |
| Serial Number                       | 8920 -for Gh 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |          |
| Source emission rate                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 254925 dpm | 712422 6 |
| Instrument Channel                  | CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OUT        |          |
| High Voltage                        | 1.0E.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (. 08      |          |
| Battery Check                       | olc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ok         |          |
| Source Check Reading (1)            | 841                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6741       | *        |
| Source Check Reading (2)            | 847                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6839       | 2/       |
| Source Check Reading (3)            | 862                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6854       |          |
| Source Check Reading (4)            | 820                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6700       |          |
| Source Check Reading (5)            | 82(                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6688       |          |
| Source Check Reading (AVERAGE)      | 838.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 6764.4     |          |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |          |
| Direct Background reading (1)       | 338                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5629       |          |
| Direct Background reading (2)       | 371                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5656       |          |
| Direct Background reading (3)       | 314                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5544       | X        |
| Direct Background reading (4)       | 351                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5521       | 4        |
| Direct Background reading (5)       | 356                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5775       |          |
| Direct Background reading (AVERAGE) | 346                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5625       | /        |
| Efficiency = (CPM-Background) / DPM | 0.19%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.45 .     | 0.16%    |
| MID-DAY SOURCE READING              | is used in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | AM         |          |
| MID-DAY BACKGROUND READING          | Noi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |          |
| EVENING SOURCE READING              | 799                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6204       | X        |
| EVENING BACKGROUND READING          | 324                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5023       | Y        |
| Morning check performed by          | JELL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Jeft       | 1/       |
| Mid-day check performed by          | Not used in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AM         |          |
| Evening check performed by          | EKM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | EKM        | 1        |
|                                     | and the second sec |            |          |

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## SENECA ARMY DEPOT SEAD-12 RI/FS .6/5/01 6/12/01 Jef

| Site: Seneca Army Depot |                 |                 |
|-------------------------|-----------------|-----------------|
| Project: SEAD-12        |                 |                 |
| Team:                   |                 |                 |
|                         | Page flof 59    |                 |
| Instrument Type         | Bicron Eidler   | Bicron Fidler   |
| AKA                     | Fidler .        | Fidler          |
| Make                    | Bicron          | Bicron          |
| Model                   | Analyst         | Analyst         |
| Serial Number           | A945P           | A945P           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 11/21/2001      | 11/21/2001      |
| Probe                   | Nal Scintilator | Nal Scintilator |
| Make                    | Bicron          | Bicron          |
| Model                   | G-5             | G-5             |
| Serial Number           | A365Q           | A365Q           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 11/21/2001      | 11/21/2001      |
| Source                  | 11日 1日 Am-241   | Am-241          |
| Source type             | Low Egamma      | 🐺 Low E gamma 😹 |
| Calibration Date        | 4/10/2001       | 4/10/2001       |
| Out of Cal Date         | 3/31/2003       | 3/31/2003       |
| Serial Number           | 8920            | 8920            |
| Source emission rate    | 254925 dpm      | 254925 dpm      |
| Instrument Channel      | Channel 1       | Out             |
| instrument efficiency   | 0.20%           | 0.50%           |
| 2 Sigma Range           | 766-879         | 5817-6154       |
| 3 Sigma Range           | 738-907         | 5732-6238       |

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| CLIENT                                                                                                                                                                               | JOB NO<br>BYЕКМ           |           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|
| Instrument: A945P Fidler<br>S/N: A945P - Out                                                                                                                                         | TIME 1730<br>OKRICANT WWW | d. ~ 70°F |
| Background<br>1 5162<br>2 5281<br>3 5132<br>4 5142<br>5 5163<br>6 5046<br>7 5253<br>8 5127<br>9 5153<br>10 5025<br>11 5234<br>12 5042<br>13 5136<br>14 5135<br>15 5029<br>Arg = 5137 |                           |           |
| Source Type: $Am - 241$<br>1 6123<br>2 6256<br>3 6523<br>4 6111<br>5 6135<br>6 5131<br>7 6239<br>8 6059<br>9 6091<br>10 6203<br>Avg = 6172                                           | \$/N = 8920               |           |

## FIDLER Serial Number A945P/A378Q

| DATE: 41201                         |           | PAGE 19 OF 59 |          |  |
|-------------------------------------|-----------|---------------|----------|--|
| Source:                             | Am-241    |               |          |  |
| Calibration Date                    | 1/0/1900  |               |          |  |
| Serial Number                       | 8920 16 1 |               |          |  |
| Source emission rate                |           | 254925 dpm    | 7(242) A |  |
| Instrument Channel                  | CHANNEL 1 | OUT           | 1        |  |
| High Voltage                        |           | υK            | /        |  |
| Battery Check                       |           | 1.1           |          |  |
| Source Check Reading (1)            |           | 6322          |          |  |
| Source Check Reading (2)            |           | 6200          | 3/       |  |
| Source Check Reading (3)            | 1         | 6269          | 7        |  |
| Source Check Reading (4)            |           | 6226          |          |  |
| Source Check Reading (5)            |           | 6074          | /        |  |
| Source Check Reading (AVERAGE)      |           | 6218          | V        |  |
|                                     |           |               |          |  |
|                                     | A         | 1.10          |          |  |
| Direct Background reading (1)       |           | 5259          | /        |  |
| Direct Background reading (2)       |           | 5261          |          |  |
| Direct Background reading (3)       |           | 5206          | 5/       |  |
| Direct Background reading (4)       |           | 5125          | 7        |  |
| Direct Background reading (5)       |           | 5241          |          |  |
| Direct Background reading (AVERAGE) |           | 5218          | 1        |  |
| Efficiency - (CDM Reckground) (DDM  |           | 0 200         | 0 14 2/  |  |
| Enciency - (CPM-Background) / DPM   |           | 400110        |          |  |
| MID-DAY SOURCE READING              |           | 6044          |          |  |
| MID-DAY BACKGROUND READING          |           | 5198          |          |  |
| EVENING SOURCE READING              |           | 6183          | 3        |  |
| EVENING BACKGROUND READING          |           | 5171          | 1        |  |
| Morning check performed by          |           | ekm           |          |  |
| Mid-day check performed by          |           | EKM           |          |  |
| Evening check performed by          |           | EKM           | V        |  |

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### FIDLER Serial Number A945P/A378Q

| DATE: 6/13/01                       |           | PAGE 15 OF 59      |               |  |  |
|-------------------------------------|-----------|--------------------|---------------|--|--|
| Source                              |           | Am-241             |               |  |  |
| Calibration Date                    |           | 1/0/1900           |               |  |  |
| Out of Cal Date                     |           | 1/0/1900           |               |  |  |
| Serial Number                       |           | 8920<br>254025 dam | 2 1. 0        |  |  |
| Source emission rate                | CHANNEL 1 |                    | 7 (n1 71090)  |  |  |
| High Voltage                        | 1         | 1.08               | /             |  |  |
| Battery Check                       |           | OK                 |               |  |  |
| Source Check Reading (1)            | 134       | 6472               |               |  |  |
| Source Check Reading (2)            | X         | 6350               | N/            |  |  |
| Source Check Reading (3)            |           | 6363               | 7             |  |  |
| Source Check Reading (4)            |           | 6220               |               |  |  |
| Source Check Reading (5)            |           | 6222               |               |  |  |
| Source Check Reading (AVERAGE)      |           | 6325               | /             |  |  |
|                                     |           |                    |               |  |  |
| Direct Background reading (1)       | N /       | 5206               |               |  |  |
| Direct Background reading (2)       | Luc /     | 5414               |               |  |  |
| Direct Background reading (3)       |           | 5355               | N/            |  |  |
| Direct Background reading (4)       |           | 5346               | Y             |  |  |
| Direct Background reading (5)       |           | 537e               |               |  |  |
| Direct Background reading (AVERAGE) |           | 5340               | /             |  |  |
| Efficiency = (CPM-Background) / DPM | X         | 138 to 4           | 0,14%         |  |  |
| MID-DAY SOURCE READING              |           | notusedin          | AM            |  |  |
| MID-DAY BACKGROUND READING          | L L       | NA                 | $\rightarrow$ |  |  |
| EVENING SOURCE READING              |           | not used it        | PM            |  |  |
| EVENING BACKGROUND READING          | X         | MA -               | 7             |  |  |
| Morning check performed by          |           | JR4 0650           | - He          |  |  |
| Mid-day check performed by          |           | NA                 | 4             |  |  |
| Evening check performed by          |           | NA                 |               |  |  |

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| DATE: 6-18-01                       |           | PAGE 16 OF 59 |           |         |  |  |
|-------------------------------------|-----------|---------------|-----------|---------|--|--|
| Source                              |           | Am-241        |           |         |  |  |
| Calibration Date                    |           | 1/0/1900      |           |         |  |  |
| Out of Cal Date                     |           | 1/0/1900      |           |         |  |  |
| Source emission rate                |           | 254925 dpm    | for Cha 7 | 124 00  |  |  |
| Instrument Channel                  | CHANNEL 1 | OUT           |           |         |  |  |
| High Voltage                        | 1.1 -     |               | >         |         |  |  |
| Battery Check                       | OK -      |               | >         |         |  |  |
| Source Check Reading (1)            | /         | 6208          |           | 4       |  |  |
| Source Check Reading (2)            |           | 6175          | /         | _       |  |  |
| Source Check Reading (3)            | 2/        | 6224          | N/        | _       |  |  |
| Source Check Reading (4)            |           | 6208          | */        |         |  |  |
| Source Check Reading (5)            | /         | 6124          | /         | _       |  |  |
| Source Check Reading (AVERAGE)      |           | 6187.8        | V         | -       |  |  |
|                                     |           |               |           |         |  |  |
| Direct Background reading (1)       |           | 5036          |           |         |  |  |
| Direct Background reading (2)       | /         | 5148          | /         |         |  |  |
| Direct Background reading (3)       |           | 5224          | ×/        |         |  |  |
| Direct Background reading (4)       | . M.      | 5277          | 1         |         |  |  |
| Direct Background reading (5)       | Y         | 5300          | /         | -       |  |  |
| Direct Background reading (AVERAGE) |           | 5197          |           | -       |  |  |
| Efficiency = (CPM-Background) / DPM | NA        | Disste        | 9,14%     | 0 71    |  |  |
| MID-DAY SOURCE READING              | 1         | Not used in   | AM        |         |  |  |
| MID-DAY BACKGROUND READING          |           | Alstused in   | AM        |         |  |  |
| EVENING SOURCE READING              | XX        | 6088          | en        |         |  |  |
| EVENING BACKGROUND READING          |           | 5082          |           | _       |  |  |
| Morning check performed by          | Int       | MA            | 1         | $\leq$  |  |  |
| Mid-day check performed by          | No        | JR4 17205     | 1 Mar     | _       |  |  |
| Evening check performed by          |           | VIRIT &       | V         | max and |  |  |

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## FIDLER Serial Number A945P/A378Q

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| DATE: 4/19/01                       | PAGE 17 OF 59 |                       |               |  |  |
|-------------------------------------|---------------|-----------------------|---------------|--|--|
| Source                              | Am-241        |                       |               |  |  |
| Calibration Date                    | 1/0/1900      |                       |               |  |  |
| Out of Cal Date                     | 1/0/1900      |                       |               |  |  |
| Serial Number                       | 8920 for ch1  |                       |               |  |  |
| Source emission rate                |               | 254925 dpm 710420 for |               |  |  |
| Instrument Channel                  | CHANNEL 1     | OUT                   |               |  |  |
| High Voltage                        |               | ok 1.08               | /             |  |  |
| Battery Check                       |               | <del>1.00</del> ole   |               |  |  |
| Source Check Reading (1)            |               | 6272                  | NY I          |  |  |
| Source Check Reading (2)            | 3             | 6181                  | ¥             |  |  |
| Source Check Reading (3)            |               | 6375                  |               |  |  |
| Source Check Reading (4)            |               | 6100                  |               |  |  |
| Source Check Reading (5)            |               | 6100                  | V             |  |  |
| Source Check Reading (AVERAGE)      |               | 6218 -                | is within 30° |  |  |
|                                     |               |                       |               |  |  |
| Direct Background reading (1)       |               | 5329                  |               |  |  |
| Direct Background reading (2)       |               | 5278                  |               |  |  |
| Direct Background reading (3)       |               | 5290                  | , Y           |  |  |
| Direct Background reading (4)       | NY N          | 5316                  | 4             |  |  |
| Direct Background reading (5)       | 1             | 5210                  |               |  |  |
| Direct Background reading (AVERAGE) |               | 5285                  |               |  |  |
| Efficiency = (CPM-Background) / DPM | NAX           | 0.37 4.               | 0,13%         |  |  |
| MID-DAY SOURCE READING              | /             | 6233 6020             | - Willin 36   |  |  |
| MID-DAY BACKGROUND READING          |               | 5247                  | NA            |  |  |
| EVENING SOURCE READING              | V             | 6204                  | TENG 30       |  |  |
| EVENING BACKGROUND READING          | D/            | 5152                  | NA            |  |  |
| Morning check performed by          |               | JR4 0700              | N/            |  |  |
| Mid-day check performed by          |               | JR4 1230              | ×2            |  |  |
| Evening check performed by          |               | JR4 1700              |               |  |  |

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### SENECA ARMY DEPOT SEAD-12 RI/FS <u>6-12-01</u>front 6/20/0( JE4

| Site: Seneca Army Depot |                 |                 |
|-------------------------|-----------------|-----------------|
| Project: SEAD-12        |                 |                 |
| Team:                   |                 |                 |
|                         | Page 18 of 59   |                 |
| Instrument Type         | Bicron Fidler   | Bicron Fidler   |
| AKA                     | Fidler          | Fidler          |
| Make                    | Bicron          | Bicron          |
| Model                   | Analyst         | Analyst         |
| Serial Number           | A945P           | A945P           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 11/21/2001      | 11/21/2001      |
| Probe:                  | Nal Scintilator | Nal Scintilator |
| Make                    | Bicron          | Bicron          |
| Model                   | G-5             | G-5             |
| Serial Number           | A365Q           | A365Q           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 11/21/2001      | 11/21/2001      |
| Source                  | Am-241          | Am-241          |
| Source type             | Low E gamma     | Low E gamma     |
| Calibration Date        | 4/10/2001       | 4/10/2001       |
| Out of Cal Date         | 3/31/2003       | 3/31/2003       |
| Serial Number           | 8920            | 8920            |
| Source emission rate    | 254925 dpm      | 254925 dpm      |
| Instrument Channel      | Channel 1       | Out             |
| instrument efficiency   | 0.20%           | 0.50%           |
| 2 Sigma Range           | 766-879         | 5791-6367       |
| 3 Sigma Range           | 738-907         | 5647-6511       |

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### FIDLER Serial Number A945P/A378Q

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| DATE: 6/20 01                       |           | PAGE 19 O  | F 59           |     |
|-------------------------------------|-----------|------------|----------------|-----|
| Source                              |           | Am-241     |                | No. |
| Calibration Date                    |           | 1/0/1900   |                | -   |
| Out of Gal Date                     |           | 1/0/1900   | afor del       | -   |
| Source emission rate                |           | 254925 dpm | 710400 Ang ang |     |
| Instrument Channel                  | CHANNEL 1 | OUT        |                |     |
| High Voltage                        |           | 1.08       |                |     |
| Battery Check                       | . /       | ok         |                |     |
| Source Check Reading (1)            | M         | 6259       | 5/             | 1   |
| Source Check Reading (2)            | 2/        | 6157       | ¥              |     |
| Source Check Reading (3)            |           | 6168       |                |     |
| Source Check Reading (4)            |           | 6291       | /              |     |
| Source Check Reading (5)            | /         | 6148       |                |     |
| Source Check Reading (AVERAGE)      |           | 6205       | /              |     |
|                                     |           |            |                |     |
| Direct Background reading (1)       | /         | 5181       |                |     |
| Direct Background reading (2)       |           | 5164       |                |     |
| Direct Background reading (3)       | , Mr      | 5336       | 1 M            |     |
| Direct Background reading (4)       | /         | 5172       | V.             |     |
| Direct Background reading (5)       |           | 5256       |                |     |
| Direct Background reading (AVERAGE) |           | 5222       |                |     |
| Efficiency = (CPM-Background) / DPM | NA        | 23876      | 0.14 %         | R7  |
| MID-DAY SOURCE READING              |           | 6092       |                | ſ   |
| MID-DAY BACKGROUND READING          |           | 5254       |                |     |
| EVENING SOURCE READING              | ×/        | 6017       | V/             |     |
| EVENING BACKGROUND READING          | ¥/        | 4905       | .) Nº          |     |
| Morning check performed by          |           | JEL 0730   | Г.У            |     |
| Mid-day check performed by          |           | NRH 1211   |                |     |
| Evening check performed by          |           | JRY 1735   |                |     |

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| DATE: 10/21/01                      |           | PAGE 20 OF  | 59          |  |  |  |
|-------------------------------------|-----------|-------------|-------------|--|--|--|
| Source -                            | Am-241    |             |             |  |  |  |
| Calibration Date                    |           | 1/0/1900    |             |  |  |  |
| Out of Cal Date                     |           | 1/0/1900    |             |  |  |  |
| Serial Number                       |           | 8920 to-Ch1 |             |  |  |  |
| Source emission rate                | CHANNEL 1 | 254925 dpm  | 71242060500 |  |  |  |
| High Voltage                        |           | 1.08        | /           |  |  |  |
| Battery Check                       |           | OK          |             |  |  |  |
| Source Check Reading (1)            | ×         | 6151        | 34          |  |  |  |
| Source Check Reading (2)            | ×         | 6202        | 4           |  |  |  |
| Source Check Reading (3)            |           | 6124        |             |  |  |  |
| Source Check Reading (4)            |           | 6135        |             |  |  |  |
| Source Check Reading (5)            |           | 6301        | -/          |  |  |  |
| Source Check Reading (AVERAGE)      |           | 6183        | /           |  |  |  |
|                                     |           |             |             |  |  |  |
| Direct Background reading (1)       | /         | 5221        |             |  |  |  |
| Direct Background reading (2)       |           | 5297        | Y/          |  |  |  |
| Direct Background reading (3)       | 3/        | 5182        | 2/          |  |  |  |
| Direct Background reading (4)       | 4         | 5189        |             |  |  |  |
| Direct Background reading (5)       |           | 5184        |             |  |  |  |
| Direct Background reading (AVERAGE) |           | 5215        |             |  |  |  |
| Efficiency = (CPM-Background) / DPM |           | 23870       | 0,14210     |  |  |  |
| MID-DAY SOURCE READING              | Rom       | 5281        | /           |  |  |  |
| MID-DAY BACKGROUND READING          | RM,       | 52556349    |             |  |  |  |
| EVENING SOURCE READING              |           | \$ 6349 608 | 1           |  |  |  |
| EVENING BACKGROUND READING          | W         | 5840        | -D/         |  |  |  |
| Morning check performed by          | ¥/        | 0725 ROM    |             |  |  |  |
| Mid-day check performed by          |           | 1245 KKS    |             |  |  |  |
| Evening check performed by          |           | NR4 1730    |             |  |  |  |

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## FIDLER Serial Number A945P/A378Q

| DATE: 6 22 01                       |           | PAGE 24 O           | F 59         |      |
|-------------------------------------|-----------|---------------------|--------------|------|
| Source                              |           | Am-241              |              |      |
| Calibration Date                    |           | 1/0/1900            |              | -    |
| Out of Cal Date                     |           | 1/0/1900            |              | -    |
| Serial Number                       |           | 8920<br>254925 dpm* | for the      |      |
| Instrument Channel                  | CHANNEL 1 | OUT                 | 710400 60100 | -    |
| High Voltage                        |           | 1.08                | 1            | 1    |
| Battery Check                       |           | ok                  |              |      |
| Source Check Reading (1)            |           | 6187                |              |      |
| Source Check Reading (2)            | ,27       | 6182                | 5/           |      |
| Source Check Reading (3)            | 7         | 6231                | 4            |      |
| Source Check Reading (4)            |           | 6322                |              |      |
| Source Check Reading (5)            |           | 6246                | /            |      |
| Source Check Reading (AVERAGE)      |           | 6234                | 1            |      |
|                                     |           |                     |              |      |
| Direct Background reading (1)       | /         | 5243                | /            | 1    |
| Direct Background reading (2)       |           | 5163                |              |      |
| Direct Background reading (3)       | 7         | 5307                | . S          |      |
| Direct Background reading (4)       | /         | 5120                | /            |      |
| Direct Background reading (5)       |           | 5208                | /            |      |
| Direct Background reading (AVERAGE) |           | 5208                | V            |      |
| Efficiency = (CPM-Background) / DPM | NA        | 2.40%               | 0,14%        | 200  |
| MID-DAY SOURCE READING              | /         | 6225                | Vill         |      |
| MID-DAY BACKGROUND READING          |           | 5085                |              | 1    |
| EVENING SOURCE READING              | V         | 6414                | within 36-cl | reck |
| EVENING BACKGROUND READING          | R/        | 5349                | merning      |      |
| Morning check performed by          |           | Jet 0730            | /            |      |
| Mid-day check performed by          |           | KKS 1230            | ille         |      |
| Evening check performed by          |           | NRH 1725            |              |      |

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## A945P

# FIDLER Serial Number A968P/A367Q-Wh

| DATE: 6 23/01                       |               | PAGE 22 OF  | 59           |  |  |
|-------------------------------------|---------------|-------------|--------------|--|--|
| Source F                            | Am-241        |             |              |  |  |
| Calibration Date                    | 1/25/2001     |             |              |  |  |
| Out of Cal Date                     | 7/24/2001     |             |              |  |  |
| Serial Number                       | A968P for Ch1 |             |              |  |  |
| Source emission rate                |               | 254925 dpm* | 710400 torot |  |  |
| Instrument Channel                  | CHANNEL 1     | 001         | A            |  |  |
| High Voltage                        | /             | 1.08        |              |  |  |
| Battery Check                       |               | ok          |              |  |  |
| Source Check Reading (1)            | J.            | 6526        | X            |  |  |
| Source Check Reading (2)            | .J/           | 6518        | P/           |  |  |
| Source Check Reading (3)            |               | 6522        |              |  |  |
| Source Check Reading (4)            |               | 6598        |              |  |  |
| Source Check Reading (5)            |               | 6531        |              |  |  |
| Source Check Reading (AVERAGE)      |               | 6539        | /            |  |  |
|                                     |               |             |              |  |  |
| Direct Background reading (1)       |               | 5497        |              |  |  |
| Direct Background reading (2)       |               | 5527        |              |  |  |
| Direct Background reading (3)       | Nº/           | 5548        | ~            |  |  |
| Direct Background reading (4)       | 4             | 5628        | *            |  |  |
| Direct Background reading (5)       |               | 5654        |              |  |  |
| Direct Background reading (AVERAGE) | /             | 5571        | /            |  |  |
| Efficiency = (CPM-Background) / DPM | MA            | 0.38 78     | 0,14 %       |  |  |
| MID-DAY SOURCE READING              | /             | 6465        | /            |  |  |
| MID-DAY BACKGROUND READING          |               | 5333        |              |  |  |
| EVENING SOURCE READING              | 3M            | 6342        | W/           |  |  |
| EVENING BACKGROUND READING          | ¥/            | 5049        | ¥/           |  |  |
| Morning check performed by          |               | JRIT 0827   |              |  |  |
| Mid-day check performed by          |               | JR4 1217    |              |  |  |
| Evening check performed by          |               | JUCH 1620   |              |  |  |

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### A945P FIDLER Serial Number A968P/A367Q KK

| DATE: 6/24/01                       |           | PAGE 23 OF    | = 59           |  |  |
|-------------------------------------|-----------|---------------|----------------|--|--|
| Source                              | Am-241    |               |                |  |  |
| Calibration Date                    | 1/25/2001 |               |                |  |  |
| Out of Cal Date                     | 7/24/2001 |               |                |  |  |
| Serial Number                       |           | A968P for Ch1 |                |  |  |
| Source emission rate                |           | 254925 dpm    | 710400 for out |  |  |
| Instrument Channel                  | CHANNEL 1 | OUT           | ,              |  |  |
| High Voltage                        |           | 1.08          | /              |  |  |
| Battery Check                       |           | ole           |                |  |  |
| Source Check Reading (1)            | V         | JKW 5T 6206   | Y              |  |  |
| Source Check Reading (2)            | 3         | 6248          | 2/             |  |  |
| Source Check Reading (3)            |           | 6070          |                |  |  |
| Source Check Reading (4)            |           | 6275 6275     |                |  |  |
| Source Check Reading (5)            |           | 6320          |                |  |  |
| Source Check Reading (AVERAGE)      |           | 6224          |                |  |  |
|                                     |           |               |                |  |  |
| Direct Background reading (1)       |           | 5115          |                |  |  |
| Direct Background reading (2)       |           | 5309          | 1              |  |  |
| Direct Background reading (3)       | Je/       | 5038          | ×/             |  |  |
| Direct Background reading (4)       | *         | 5164          | Y              |  |  |
| Direct Background reading (5)       |           | 5126          |                |  |  |
| Direct Background reading (AVERAGE) |           | 5150          |                |  |  |
| Efficiency = (CPM-Background) / DPM | NA        | D.42 %        | 0, 15%         |  |  |
| MID-DAY SOURCE READING              |           | 6175          |                |  |  |
| MID-DAY BACKGROUND READING          |           | 5165          | 1/             |  |  |
| EVENING SOURCE READING              | , NA      | 6014          | 2              |  |  |
| EVENING BACKGROUND READING          |           | 5090          | ~~/            |  |  |
| Morning check performed by          |           | JULY 0750     |                |  |  |
| Mid-day check performed by          |           | JEU 1205      |                |  |  |
| Evening check performed by          |           | KUL 1530      |                |  |  |

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| DATE: 625101                        |           | PAGE 24 OF | 59            |              |
|-------------------------------------|-----------|------------|---------------|--------------|
| Source                              |           | Am-241     |               |              |
| Calibration Date                    |           | 5/25/2001  |               |              |
| Out of Cal Date                     |           | 11/21/2001 |               |              |
| Serial Number                       |           | A945P      | for Ch1       |              |
| Source emission rate                |           | 254925 dpm | 710400 for at |              |
| Instrument Channel                  | CHANNEL 1 | OUT        | 2             |              |
| High Voltage                        | /         | 1.1        | $\geq$        |              |
| Battery Check                       |           | ok         | $\geq$        |              |
| Source Check Reading (1)            |           | (031       | $\geq$        |              |
| Source Check Reading (2)            | 1         | 6096       | $\geq$        |              |
| Source Check Reading (3)            |           | 6230       | $\geq$        |              |
| Source Check Reading (4)            |           | 6230       | $\langle$     |              |
| Source Check Reading (5)            |           | 6262       |               |              |
| Source Check Reading (AVERAGE)      |           | 6169.8     |               |              |
|                                     |           |            |               |              |
| Direct Background reading (1)       | 5126 OUT  | $\ge$      | $\geq$        |              |
| Direct Background reading (2)       | 5019 OUT  | >          | $\geq$        |              |
| Direct Background reading (3)       | 5180 WT   | $\geq$     | $\geq$        |              |
| Direct Background reading (4)       | 5093 OVT  | $\geq$     | $\geq$        |              |
| Direct Background reading (5)       | 5129 OW   | $\geq$     | $\geq$        |              |
| Direct Background reading (AVERAGE) | 5109.400  | $\ge$      |               |              |
| Efficiency = (CPM-Background) / DPM | \$0,4T%   | 0,15%      |               | Rm<br>7(27(3 |
| MID-DAY SOURCE READING              | 1015 KUL  | 6115       | $\searrow$    |              |
| MID-DAY BACKGROUND READING          | -5100 KIC | 5100       | $\searrow$    |              |
| EVENING SOURCE READING              | NA        | 6027       | >             |              |
| EVENING BACKGROUND READING          | NA        | 5052       | >             |              |
| Morning check performed by          | KIK OBOO  | >          | > <           |              |
| Mid-day check performed by          | JMK INA   | >          | > <           |              |
| Evening check performed by          | rul 1330  |            | $\geq$        |              |

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| DATE: 6/26/01                          |            | PAGE 25 OF | = 59               |  |  |  |
|----------------------------------------|------------|------------|--------------------|--|--|--|
| Source                                 | Am-241     |            |                    |  |  |  |
| Calibration Date                       | 5/25/2001  |            |                    |  |  |  |
| Out of Cal Date                        |            | 11/21/2001 |                    |  |  |  |
| Serial Number                          |            | A945P      | -foren1            |  |  |  |
| Source emission rate                   |            | 254925 dpm | 710400 foron       |  |  |  |
| High Voltage                           |            | i.l        | $\bigtriangledown$ |  |  |  |
| Battery Check                          |            | OK         | $\leq$             |  |  |  |
| Source Check Reading (1)               |            | 6031       | $\sim$             |  |  |  |
| Source Check Reading (2)               | (KUA       | 6135       | X                  |  |  |  |
| Source Check Reading (3)               |            | 6068       |                    |  |  |  |
| Source Check Reading (4)               |            | 6043       |                    |  |  |  |
| Source Check Reading (5)               |            | 6096       | $\geq$             |  |  |  |
| Source Check Reading (AVERAGE)         |            | 6074       | >                  |  |  |  |
|                                        |            |            |                    |  |  |  |
| Direct Background reading (1)          | 5162 Cut   | $\ge$      | X                  |  |  |  |
| Direct Background reading (2)          | 5166       | $\geq$     | $\geq$             |  |  |  |
| Direct Background reading (3)          | 5066       | $\geq$     | $\sim$             |  |  |  |
| Direct Background reading (4)          | 5091       | $\geq$     |                    |  |  |  |
| Direct Background reading (5)          | SOYL       | $\geq$     |                    |  |  |  |
| Direct Background reading (AVERAGE)    | 1505 5105  | $\geq$     |                    |  |  |  |
| Efficiency = (CPM-Background) / DPM    | 3,14%      | 03840 \$   | $\ge$              |  |  |  |
| MID-DAY SOURCE READING                 |            | 6261       | $\times$           |  |  |  |
| MID-DAY BACKGROUND READING             | 2          | 5086       | $\sim$             |  |  |  |
| EVENING SOURCE READING                 | 4          | 6173       | >>                 |  |  |  |
| EVENING BACKGROUND READING             |            | 4801       | > <                |  |  |  |
| Morning check performed by Survey 65°F | K44 0730   | $\ge$      | $\geq$             |  |  |  |
| Mid-day check performed by             | Rom 12:10p | $\geq$     | X                  |  |  |  |
| Evening check performed by             | URH 1744   | ><         |                    |  |  |  |

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|-------------------------------------|---------------|---------------|-------------------|---------------|--|--|
| Source                              |               | Am-241        |                   |               |  |  |
| Calibration Date                    |               | 5/25/2001     |                   |               |  |  |
| Out of Cal Date                     |               | 11/21/2001    |                   |               |  |  |
| Serial Number                       |               | A945P for Ch1 |                   |               |  |  |
| Source emission rate                |               | 254925 dpm    | 710400 for :      |               |  |  |
|                                     | CHANNEL I     | 001           | $\langle \rangle$ | -             |  |  |
| High Voltage                        | 1             | 1.04          | $\sim$            |               |  |  |
| Battery Check                       |               | ok            | $\geq$            |               |  |  |
| Source Check Reading (1)            |               | 6356          | $\geq$            |               |  |  |
| Source Check Reading (2)            | 3ª            | 6202          |                   |               |  |  |
| Source Check Reading (3)            | 4             | 6331          | $\geq$            |               |  |  |
| Source Check Reading (4)            |               | 6306          | $\geq$            |               |  |  |
| Source Check Reading (5)            |               | 6225          | $\geq$            |               |  |  |
| Source Check Reading (AVERAGE)      |               | 6284          |                   |               |  |  |
|                                     |               |               |                   |               |  |  |
| Direct Background reading (1)       | 497200        | $\ge$         | $\ge$             | ]             |  |  |
| Direct Background reading (2)       | 5178          | $\geq$        |                   |               |  |  |
| Direct Background reading (3)       | 5141          |               |                   |               |  |  |
| Direct Background reading (4)       | 5216          | $\geq$        | $\geq$            |               |  |  |
| Direct Background reading (5)       | 5168          | $\geq$        | $\geq$            |               |  |  |
| Direct Background reading (AVERAGE) | 5135V         | $\times$      | >                 |               |  |  |
| Efficiency = (CPM-Background) / DPM | 0.45%         | 0,16°10       | $\times$          | 2 m<br>7(27() |  |  |
| MID-DAY SOURCE READING              | 620600T)      | /             | $\times$          |               |  |  |
| MID-DAY BACKGROUND READING          | 5161          | W.            | $\sim$            |               |  |  |
| EVENING SOURCE READING              | 6131          | /             | >                 | ]             |  |  |
| EVENING BACKGROUND READING          | 5083 V        |               | >                 |               |  |  |
| Morning check performed by          | Rom 5-11, 70° | >             | >                 | ]             |  |  |
| Mid-day check performed by          | AML 1230      |               | >                 |               |  |  |
| Evening check performed by          | JUK 1739      | $\geq$        | $\geq$            |               |  |  |

## FIDLER Serial Number A945P/A378Q

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| DATE: 6/28(0)                            |                       | PAGE 27 OF | 59                                    |              |
|------------------------------------------|-----------------------|------------|---------------------------------------|--------------|
| Source                                   | All the second second | Am-241     | i i i i i i i i i i i i i i i i i i i |              |
| Calibration Date                         |                       | 5/25/2001  |                                       |              |
| Out of Cal Date                          |                       | 11/21/2001 | A                                     | 1            |
| Serial Number                            |                       | A945P      | for Ch1                               | L            |
| Source emission rate                     | CHANNEL 1             | 254925 apm | 710400 +01 01                         | ł            |
| High Voltage                             | /                     | 1.0%       | $\leq$                                | 1            |
| Battery Check                            |                       | ok         | >                                     | 1            |
| Source Check Reading (1)                 | V                     | 6515       | $\geq$                                |              |
| Source Check Reading (2)                 |                       | 6467       | $\geq$                                |              |
| Source Check Reading (3)                 | /                     | 6413       | $\geq$                                |              |
| Source Check Reading (4)                 |                       | 6342       | $\geq$                                |              |
| Source Check Reading (5)                 | /                     | 6279       | $\geq$                                |              |
| Source Check Reading (AVERAGE)           | ./                    | 6403       | >                                     | ok           |
|                                          |                       |            |                                       |              |
| Direct Background reading (1)            | 5446 0007             | $\ge$      | $\geq$                                |              |
| Direct Background reading (2)            | 5277                  | $\geq$     | $\geq$                                |              |
| Direct Background reading (3)            | 5304                  | $\geq$     | $\geq$                                |              |
| Direct Background reading (4)            | 5254                  | $\geq$     | $\geq$                                |              |
| Direct Background reading (5)            | 5151                  | $\geq$     | $\geq$                                |              |
| Direct Background reading (AVERAGE)      | 5286V                 | $\ge$      |                                       |              |
| Efficiency = (CPM-Background) / DPM      | 0.16%                 | NA         | $\times$                              | em<br>7(27(0 |
| MID-DAY SOURCE READING                   | 6104                  | W          | $\ge$                                 |              |
| MID-DAY BACKGROUND READING               | 5152                  |            | >                                     |              |
| EVENING SOURCE READING                   | Y                     | 6150       | >                                     |              |
| EVENING BACKGROUND READING               | E                     | 5173       | $\geq$                                |              |
| Morning check performed by suny hary 72' | JRH 0725              | $\geq$     | $\geq$                                |              |
| Mid-day check performed by               | Jey 1220              | $\geq$     | $\geq$                                |              |
| Evening check performed by               | Rom 05: 340           | > <        |                                       | 9            |

## FIDLER Serial Number A945P/A378Q

| DATE: 6/29/01                       | PAGE 28 OF 59          |                |               |  |  |  |
|-------------------------------------|------------------------|----------------|---------------|--|--|--|
| Source                              |                        | Am-241         |               |  |  |  |
| Calibration Date                    |                        | 5/25/2001      |               |  |  |  |
| Out of Cal Date                     |                        | 11/21/2001     |               |  |  |  |
| Source emission rate                |                        | A945P for Ch 1 |               |  |  |  |
| Instrument Channel                  | CHANNEL 1              | OUT            | 109 x for out |  |  |  |
| High Voltage                        |                        | 1.28           | $\searrow$    |  |  |  |
| Battery Check                       |                        | ok             | $\searrow$    |  |  |  |
| Source Check Reading (1)            | 3                      | 6228           | $\geq$        |  |  |  |
| Source Check Reading (2)            |                        | 6162           |               |  |  |  |
| Source Check Reading (3)            |                        | 6349           |               |  |  |  |
| Source Check Reading (4)            |                        | 6338           |               |  |  |  |
| Source Check Reading (5)            |                        | 6236           |               |  |  |  |
| Source Check Reading (AVERAGE)      |                        | 6263           |               |  |  |  |
|                                     |                        |                |               |  |  |  |
| Direct Background reading (1)       | 51910                  | $\geq$         | X             |  |  |  |
| Direct Background reading (2)       | 5257                   | $\geq$         | $\sim$        |  |  |  |
| Direct Background reading (3)       | 5245                   | $\geq$         |               |  |  |  |
| Direct Background reading (4)       | 5184                   | $\geq$         |               |  |  |  |
| Direct Background reading (5)       | 5344                   | $\geq$         |               |  |  |  |
| Direct Background reading (AVERAGE) | 5244V                  | >              |               |  |  |  |
| Efficiency = (CPM-Background) / DPM | Dortt To               | - 9,14%        | $\ge$         |  |  |  |
| MID-DAY SOURCE READING              | 6378                   |                | X             |  |  |  |
| MID-DAY BACKGROUND READING          | 5724                   | July           | $\searrow$    |  |  |  |
| EVENING SOURCE READING              | 6097                   | /              | $\searrow$    |  |  |  |
| EVENING BACKGROUND READING          | 5267                   |                | $\searrow$    |  |  |  |
| Morning check performed by          | Rm 07:55a<br>14224 70° | >              | $\geq$        |  |  |  |
| Mid-day check performed by          | AML 1130 72:           | $\geq$         |               |  |  |  |
| Evening check performed by          | jell 1540              | $\searrow$     |               |  |  |  |

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### FIDLER Serial Number A945P/A378Q

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| DATE: 7/9/01                         |            | PAGE 29 OF | 59            |  |  |
|--------------------------------------|------------|------------|---------------|--|--|
| Source                               | Am-241     |            |               |  |  |
| Calibration Date                     |            | 5/25/2001  |               |  |  |
| Out of Cal Date                      |            | 11/21/2001 |               |  |  |
| Serial Number                        |            | A945P      | for Ch1       |  |  |
| Source emission rate                 |            | 254925 dpm | 710400 For 20 |  |  |
| Instrument Channel                   | CHANNEL 1  | OUT        | $\geq$        |  |  |
| High Voltage                         |            | 623 1.08   | $\geq$        |  |  |
| Battery Check                        |            | ole        | $\geq$        |  |  |
| Source Check Reading (1)             |            | 10251      | $\geq$        |  |  |
| Source Check Reading (2)             | 37         | 6275       | $\geq$        |  |  |
| Source Check Reading (3)             | 1          | 6261       | $\geq$        |  |  |
| Source Check Reading (4)             |            | 6246       | $\geq$        |  |  |
| Source Check Reading (5)             |            | 6225       | $\geq$        |  |  |
| Source Check Reading (AVERAGE)       |            | 6252       |               |  |  |
|                                      |            |            |               |  |  |
| Direct Background reading (1)        | 5357 [out] | $\ge$      | $\geq$        |  |  |
| Direct Background reading (2)        | 5338       |            | $\geq$        |  |  |
| Direct Background reading (3)        | 5377       | $\geq$     | $\geq$        |  |  |
| Direct Background reading (4)        | 5295       | $\geq$     | $\geq$        |  |  |
| Direct Background reading (5)        | 5236       | $\geq$     | $\geq$        |  |  |
| Direct Background reading (AVERAGE)  | 5321 V     | >          | >             |  |  |
| Efficiency = (CPM-Background) / DPM  | 9.13%      | NA         |               |  |  |
|                                      | - 11       | Λ.Λ        |               |  |  |
| MID-DAY BACKGROUND READING           | T VSER IN  | MM         | $\sim$        |  |  |
| EVENING SOURCE READING               | .X         | 6138       | >>            |  |  |
| EVENING BACKGROUND READING           |            | 5272       | >             |  |  |
| Morning check performed by 70°F cmm, | JE4 0715   | $\geq$     | $\geq$        |  |  |
| Mid-day check performed by Not used  | AM JAH     | $\geq$     | $\geq$        |  |  |
| Evening check performed by           | JEH 1752   |            |               |  |  |

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| DATE: 7/10/01                          |            | PAGE 30 OF        | 59                |       |  |  |
|----------------------------------------|------------|-------------------|-------------------|-------|--|--|
| Source                                 |            | Am-241            |                   |       |  |  |
| Calibration Date                       |            | 5/25/2001         |                   |       |  |  |
| Out of Cal Date                        |            | 11/21/2001        |                   |       |  |  |
| Serial Number                          |            | A945P             | for Ch1           |       |  |  |
| Source emission rate                   | CHANNEL 1  |                   | 710900 for out    |       |  |  |
| High Voltage                           |            | 1.08              | $\triangleleft$   |       |  |  |
| Battery Check                          |            | ok                | $\leq$            |       |  |  |
| Source Check Reading (1)               |            | 6294              | $\geq$            |       |  |  |
| Source Check Reading (2)               | 3          | 6249              |                   |       |  |  |
| Source Check Reading (3)               |            | 6366              |                   |       |  |  |
| Source Check Reading (4)               |            | 6319              | $\langle$         |       |  |  |
| Source Check Reading (5)               |            | 6323              | $\langle \rangle$ |       |  |  |
| Source Check Reading (AVERAGE)         | /          | 6310              | $\geq$            |       |  |  |
|                                        |            |                   |                   |       |  |  |
| Direct Background reading (1)          | 5295 Cut   | $\geq$            | $\geq$            |       |  |  |
| Direct Background reading (2)          | 5783       | $\geq$            | $\geq$            |       |  |  |
| Direct Background reading (3)          | 5262       |                   | $\geq$            |       |  |  |
| Direct Background reading (4)          | 4971       |                   |                   |       |  |  |
| Direct Background reading (5)          | 5061       | $\langle \rangle$ | $\sim$            |       |  |  |
| Direct Background reading (AVERAGE)    | 5154 V     | $\geq$            | $\geq$            |       |  |  |
| Efficiency = (CPM-Background) / DPM    | 0,16%      | 6.45 %            | P.0.<br>1/2       | m 10) |  |  |
| MID-DAY SOURCE READING                 | UCD IN     | 1 nn - JRH        | $\searrow$        |       |  |  |
| MID-DAY BACKGROUND READING             | USEP IIN A | W                 | $\geq$            |       |  |  |
| EVENING SOURCE READING                 | W          | 6121              | $\geq$            |       |  |  |
| EVENING BACKGROUND READING             | Y          | 5079              | $\geq$            |       |  |  |
| Morning check performed by 65°F (Lunit | -irit 0700 | $\geq$            | $\geq$            |       |  |  |
| Mid-day check performed by Not vied in | AM         | $\geq$            | $\sim$            |       |  |  |
| Evening check performed by             | JEH 1740   | > <               | >                 |       |  |  |

## FIDLER Serial Number A945P/A378Q

| DATE: 7/11/01                        |                         | PAGE 31 O  | F 59                                    |                |
|--------------------------------------|-------------------------|------------|-----------------------------------------|----------------|
| Source                               | a and the first and the | Am-241     | provide and a start of the start of the |                |
| Calibration Date                     |                         | 5/25/2001  |                                         |                |
| Out of Cal Date                      |                         | 11/21/2001 |                                         |                |
| Serial Number                        |                         | A945P      | for Ch1                                 | 1.00           |
| Source emission rate                 |                         | 254925 dpm | 710420 for out                          |                |
|                                      | CHANNEL 1               | 001        | $\langle \rangle$                       |                |
| High Voltage                         | /                       | 1.1        |                                         |                |
| Battery Check                        |                         | ok         | $\sim$                                  |                |
| Source Check Reading (1)             |                         | 6275       | $\geq$                                  |                |
| Source Check Reading (2)             | 3/                      | 6171       | $\geq$                                  |                |
| Source Check Reading (3)             | 7                       | 6195       | $\geq$                                  |                |
| Source Check Reading (4)             | -/                      | 6162       | $\geq$                                  |                |
| Source Check Reading (5)             |                         | 62.89      | $\geq$                                  |                |
| Source Check Reading (AVERAGE)       |                         | 6218       |                                         | 1              |
|                                      |                         |            |                                         | 2              |
| Direct Background reading (1)        | 5036 OUT)               | $\ge$      | $\mathbf{X}$                            | . 1            |
| Direct Background reading (2)        | 5136                    | $\geq$     | $\geq$                                  |                |
| Direct Background reading (3)        | 5067                    | $\geq$     | $\geq$                                  |                |
| Direct Background reading (4)        | 5161                    | $\geq$     | $\geq$                                  |                |
| Direct Background reading (5)        | 4916                    | $\geq$     | $\geq$                                  |                |
| Direct Background reading (AVERAGE)  | 5063V                   | >          |                                         |                |
| Efficiency = (CPM-Background) / DPM  | 2-45 75                 | 0,16%      | $\searrow$                              | Rom<br>7/27/01 |
| MID-DAY SOURCE READING               | 203-040                 | 6315       | $\ge$                                   |                |
| MID-DAY BACKGROUND READING           | /                       | 5090       | X                                       |                |
| EVENING SOURCE READING               | with                    | 6040       | $\geq$                                  |                |
| EVENING BACKGROUND READING           | /                       | 5114       |                                         |                |
| Morning check performed by 2m 320    | 7:25 a                  | $\geq$     |                                         |                |
| Mid-day check performed by nom 220   | 12:02p                  | $\geq$     |                                         |                |
| Evening check performed by Com Sugar | 5:250                   | ><         |                                         |                |

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|----------------------------------------|-------------------|------------|----------------|
| Source                                 |                   | Am-241     |                |
| Calibration Date                       |                   | 5/25/2001  |                |
| Serial Number                          | -                 | A945P      | 6-61           |
| Source emission rate                   |                   | 254925 dpm | 710400 For out |
| Instrument Channel                     | CHANNEL 1         | OUT        | $\sim$         |
| High Voltage                           |                   | 1,1        | $\geq$         |
| Battery Check                          |                   | ok         | $\geq$         |
| Source Check Reading (1)               | N/                | 6318       | $\geq$         |
| Source Check Reading (2)               | Į.                | 6258       | $\geq$         |
| Source Check Reading (3)               |                   | 6253       | $\geq$         |
| Source Check Reading (4)               |                   | 6349       | $\geq$         |
| Source Check Reading (5)               |                   | 6158       | $\geq$         |
| Source Check Reading (AVERAGE)         |                   | 6267       | >              |
|                                        |                   |            |                |
| Direct Background reading (1)          | 5135 Jour         | $\ge$      | >              |
| Direct Background reading (2)          | 5112              |            | >              |
| Direct Background reading (3)          | 5054              | $\geq$     | >              |
| Direct Background reading (4)          | 5150              | $\geq$     | $\geq$         |
| Direct Background reading (5)          | 5021              | 2          | $\geq$         |
| Direct Background reading (AVERAGE)    | 5094 V            | $\geq$     | >              |
| Efficiency = (CPM-Background) / DPM    | 2.46%             | 0,17%      | $\ge$          |
| MID-DAY SOURCE READING                 |                   | 6110       | >              |
| MID-DAY BACKGROUND READING             |                   | 5094       | >              |
| EVENING SOURCE READING                 | in                | 6049       | > <            |
| EVENING BACKGROUND READING             |                   | 5129       | > <            |
| Morning check performed by Ran 7: 050- | 680               | $\geq$     | $\geq$         |
| Mid-day check performed by Eom 11:55 g | Ordere set<br>65° | $\geq$     | $\geq$         |
| Evening check performed by Rim 5:300   | PC 68°            | >          | ><             |

## FIDLER Serial Number A945P/A378Q

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| DATE: 7/13/0)                        |           | PAGE 33 O  | F 59                             |               |  |  |
|--------------------------------------|-----------|------------|----------------------------------|---------------|--|--|
| Source                               |           | Am-241     | کې د د (۲)<br>کې د د (۲)<br>مورد |               |  |  |
| Calibration Date                     |           | 5/25/2001  |                                  |               |  |  |
| Out of Cal Date                      |           | 11/21/2001 |                                  |               |  |  |
| Serial Number                        |           | A945P      | for (h1                          |               |  |  |
| Source emission rate                 |           | 254925 dpm | 710400 For out                   |               |  |  |
|                                      | CHANNEL 1 | 001        | $\langle \rangle$                |               |  |  |
| High Voltage                         |           | l.         | $\geq$                           |               |  |  |
| Battery Check                        |           | ok         | $\geq$                           |               |  |  |
| Source Check Reading (1)             |           | 6100       | $\geq$                           |               |  |  |
| Source Check Reading (2)             | 2 M       | 6068       | $\geq$                           |               |  |  |
| Source Check Reading (3)             |           | 6262       | $\geq$                           |               |  |  |
| Source Check Reading (4)             |           | 6066       | $\geq$                           |               |  |  |
| Source Check Reading (5)             |           | 6150       | $\geq$                           |               |  |  |
| Source Check Reading (AVERAGE)       |           | 6129       |                                  |               |  |  |
|                                      |           |            |                                  |               |  |  |
| Direct Background reading (1)        | 50730ut   | $\ge$      | $\geq$                           |               |  |  |
| Direct Background reading (2)        | 5197      | $\geq$     | $\geq$                           |               |  |  |
| Direct Background reading (3)        | 5175      | $\geq$     | $\geq$                           |               |  |  |
| Direct Background reading (4)        | 5080      | $\geq$     | $\geq$                           |               |  |  |
| Direct Background reading (5)        | 5109      | $\geq$     | $\geq$                           |               |  |  |
| Direct Background reading (AVERAGE)  | 5127V     | >          |                                  |               |  |  |
| Efficiency = (CPM-Background) / DPM  | 2-3972    | -0,14%     | $\ge$                            | 2 m<br>7/27/2 |  |  |
| MID-DAY SOURCE READING               |           | 6065       | $\searrow$                       |               |  |  |
| MID-DAY BACKGROUND READING           | W         | 5160       |                                  |               |  |  |
| EVENING SOURCE READING               | 8         | 6015       | $\sim$                           |               |  |  |
| EVENING BACKGROUND READING           |           | 5120       | >>                               |               |  |  |
| Morning check performed by pm 07:05e | sunny 65° | >          | > <                              |               |  |  |
| Mid-day check performed by 24 1220   | NA        | >          |                                  |               |  |  |
| Evening check performed by KLF 1730  | 700       |            |                                  |               |  |  |

## FIDLER Serial Number A945P/A378Q

| DATE: 7/14/01                       |            | PAGE 34 OF 59 |                 |  |  |  |
|-------------------------------------|------------|---------------|-----------------|--|--|--|
| Source                              |            | Am-241        |                 |  |  |  |
| Calibration Date                    |            | 5/25/2001     |                 |  |  |  |
| Out of Cal Date                     |            | 11/21/2001    |                 |  |  |  |
| Serial Number                       |            | A945P         | for Ch1         |  |  |  |
| Source emission rate                |            | 254925 dpm    | 712400 For OUT  |  |  |  |
| High Voltage                        | CHANNEL I  | D BILV        | $\triangleleft$ |  |  |  |
| Battery Check                       |            | OK            | $\leq$          |  |  |  |
| Source Check Reading (1)            | al al      | 5963          | $\geq$          |  |  |  |
| Source Check Reading (2)            | T/         | 6161          | $\langle$       |  |  |  |
| Source Check Reading (3)            |            | 6263          | $\langle$       |  |  |  |
| Source Check Reading (4)            |            | 6086          | $\langle$       |  |  |  |
| Source Check Reading (5)            |            | 6252          | $\geq$          |  |  |  |
| Source Check Reading (AVERAGE)      |            | 6141          | >               |  |  |  |
|                                     |            |               |                 |  |  |  |
| Direct Background reading (1)       | SIGC/(NAT) | $\geq$        | $\geq$          |  |  |  |
| Direct Background reading (2)       | 5248       | $\sim$        | $\geq$          |  |  |  |
| Direct Background reading (3)       | 5235       | $\geq$        | $\geq$          |  |  |  |
| Direct Background reading (4)       | 5196       | $\sim$        | $\geq$          |  |  |  |
| Direct Background reading (5)       | 5291       |               | $\geq$          |  |  |  |
| Direct Background reading (AVERAGE) | 52270      | $\ge$         |                 |  |  |  |
| Efficiency = (CPM-Background) / DPM | E          | - 0,13%       | >               |  |  |  |
| MID-DAY SOURCE READING              | in         | 6271          | >               |  |  |  |
| MID-DAY BACKGROUND READING          |            | 5211          | $\geq$          |  |  |  |
| EVENING SOURCE READING              | mot used   | in PM         | $\geq$          |  |  |  |
| EVENING BACKGROUND READING          | not used   | inpm          | $\geq$          |  |  |  |
| Morning check performed by          | MA         | $\geq$        | $\geq$          |  |  |  |
| Mid-day check performed by          | KU 1220    | $\geq$        | $\geq$          |  |  |  |
| Evening check performed by          | **5 1536   | ><            | >               |  |  |  |

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### FIDLER Serial Number A945P/A378Q

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| DATE: 7/15/51                        |                 | PAGE 35 OF | 59                                    |                |
|--------------------------------------|-----------------|------------|---------------------------------------|----------------|
| Source                               |                 | Am-241     |                                       |                |
| Calibration Date                     |                 | 5/25/2001  | · · · · · · · · · · · · · · · · · · · |                |
| Out of Cal Date                      |                 | 11/21/2001 | 1 11 1                                | 4              |
| Serial Number                        |                 | A945P      | for Chi                               |                |
|                                      | CHANNEL 1       |            | 10 400 for 200                        | 1              |
| High Voltage                         |                 | 1.1        | $\leq$                                |                |
| Battery Check                        | , 1/            | ok         | $\geq$                                |                |
| Source Check Reading (1)             | N               | 6232       | $\geq$                                |                |
| Source Check Reading (2)             | ¥               | 6231       |                                       | 1              |
| Source Check Reading (3)             | /               | 6124       | $\langle$                             |                |
| Source Check Reading (4)             |                 | 6110       | $\langle \rangle$                     |                |
| Source Check Reading (5)             |                 | 6178       | $\langle \rangle$                     |                |
| Source Check Reading (AVERAGE)       |                 | 6175       |                                       | 10.0           |
|                                      |                 |            |                                       |                |
| Direct Background reading (1)        | 5269 00         | $\geq$     | $\geq$                                |                |
| Direct Background reading (2)        | 5219            |            |                                       |                |
| Direct Background reading (3)        | 5152            | $\geq$     | $\geq$                                |                |
| Direct Background reading (4)        | 5146            | $\geq$     |                                       |                |
| Direct Background reading (5)        | 5340            | $\geq$     | $\langle$                             |                |
| Direct Background reading (AVERAGE)  | 5225V           | $\ge$      | $\geq$                                | 1              |
| Efficiency = (CPM-Background) / DPM  | 2,3TTOK         | - 0,13%    | X                                     | Rom<br>2/27/01 |
| MID-DAY SOURCE READING               | 1               | 6383       | $\ge$                                 |                |
| MID-DAY BACKGROUND READING           | NY              | 5239       | $\geq$                                |                |
| EVENING SOURCE READING               | Y               | 6129       | $\geq$                                |                |
| EVENING BACKGROUND READING           |                 | 5191       | $\geq$                                |                |
| Morning check performed by Rom over  | rast 7:17 a 68° | $\geq$     | $\geq$                                |                |
| Mid-day check performed by Rism Sure | t 12: 10p 72    |            |                                       |                |
| Evening check performed by Kics 1537 | 78°, P. Cloudy  |            |                                       |                |

## FIDLER Serial Number A945P/A378Q

| DATE: 7/16/01                       |            | PAGE 36 OF | 59              |                |
|-------------------------------------|------------|------------|-----------------|----------------|
| Source                              |            | Am-241     |                 | 4              |
| Calibration Date                    | 5/25/2001  |            |                 |                |
| Out of Cal Date                     |            | 11/21/2001 |                 |                |
| Serial Number                       |            | A945P      | Gr Ch1          |                |
|                                     | CHANNEL 1  | 254925 upm | 110430 101201   |                |
| High Voltage                        |            |            | $\triangleleft$ |                |
| Battery Check                       |            | DIC        | $\sim$          |                |
| Source Check Reading (1)            | Y          | 6363       | $\ge$           |                |
| Source Check Reading (2)            | 23/        | 6303       | $\geq$          |                |
| Source Check Reading (3)            |            | 6362 em    | $\geq$          |                |
| Source Check Reading (4)            |            | 6288       | $\langle$       |                |
| Source Check Reading (5)            | /          | 0376       | $\langle$       |                |
| Source Check Reading (AVERAGE)      | /          | 6338       | $\geq$          | 100            |
|                                     |            |            |                 |                |
| Direct Background reading (1)       | 5258 (OUT) | $\ge$      | $\ge$           |                |
| Direct Background reading (2)       | 5194       |            | $\sim$          |                |
| Direct Background reading (3)       | 5309       |            | $\geq$          |                |
| Direct Background reading (4)       | 5128       |            | $\langle$       |                |
| Direct Background reading (5)       | 5192       | $\langle$  | $\langle$       |                |
| Direct Background reading (AVERAGE) | 5216 V     | $\ge$      | $\ge$           |                |
| Efficiency = (CPM-Background) / DPM | a Dettore  | - 0,16%    | X               | Pom<br>7/27/21 |
| MID-DAY SOURCE READING              | 6324/011   |            | $\times$        |                |
| MID-DAY BACKGROUND READING          | 5248       | V          | >               |                |
| EVENING SOURCE READING              | 6113       |            | $\geq$          |                |
| EVENING BACKGROUND READING          | 5140V      | 6          | $\geq$          |                |
| Morning check performed by Rom 68°  | SUNAL      | $\geq$     | $\geq$          |                |
| Mid-day check performed by ANL 73°  | SUMPLY WUN | $\sim$     | $\langle$       |                |
| Evening check performed by AML 108° | clouby cod | 25         | $\geq$          | <u>, 1</u>     |

## FIDLER Serial Number A945P/A378Q

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| DATE: 7/17/01                       |           | PAGE 37 OF | 59            | ]               |
|-------------------------------------|-----------|------------|---------------|-----------------|
| Source                              |           | Am-241     |               |                 |
| Calibration Date                    |           | 5/25/2001  |               | 1               |
| Out of Cal Date                     |           | 11/21/2001 | 1 1. 1        |                 |
| Source emission rate                |           | 254925 dpm | tor Chi       |                 |
| Instrument Channel                  | CHANNEL 1 | OUT        | 10100 (97 510 |                 |
| High Voltage                        |           | 1.08       | $\geq$        | ]               |
| Battery Check                       |           | ok         | $\geq$        |                 |
| Source Check Reading (1)            | Y         | 6694       | $\geq$        |                 |
| Source Check Reading (2)            | ¥.        | 6501       | $\langle$     |                 |
| Source Check Reading (3)            |           | 6443       | $\langle$     |                 |
| Source Check Reading (4)            |           | 6535       | $\langle$     |                 |
| Source Check Reading (5)            |           | 6610       | $\langle$     |                 |
| Source Check Reading (AVERAGE)      | /         | 6557       | >             |                 |
|                                     |           |            |               |                 |
| Direct Background reading (1)       | 5322 DUT  | $\geq$     | $\geq$        | 1. 1            |
| Direct Background reading (2)       | 5357      | $\geq$     | $\geq$        |                 |
| Direct Background reading (3)       | 5424      | $\geq$     | $\geq$        |                 |
| Direct Background reading (4)       | 5471      | $\geq$     | $\geq$        |                 |
| Direct Background reading (5)       | 5451      | $\geq$     | $\geq$        |                 |
| Direct Background reading (AVERAGE) | 5404 V    | $\ge$      | >             |                 |
| Efficiency = (CPM-Background) / DPM | 0.16%     | 0.45%      | >             | P.m.<br>7/27/01 |
| MID-DAY SOURCE READING              |           | 6283       | $\times$      |                 |
| MID-DAY BACKGROUND READING          | X         | 5169       | >             |                 |
| EVENING SOURCE READING              | Y         | 6255       | >             |                 |
| EVENING BACKGROUND READING          |           | 5151       | >             |                 |
| Morning check performed by          | JRH 0730  | $\geq$     | $\geq$        |                 |
| Mid-day check performed by          | JRH 1200  | $\geq$     | $\geq$        |                 |
| Evening check performed by          | AML 1720  | > <        | ><            |                 |

### SENECA ARMY DEPOT SEAD-12 RI/FS 7\_27front page

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| Site: Seneca Army Depot |                 |                 |
|-------------------------|-----------------|-----------------|
| Project: SEAD-12        |                 |                 |
| Team:                   |                 |                 |
|                         | Page yof        | 59              |
| Instrument Type         | Bicron Fidler   | Bicron Fidler   |
| AKA                     | Fidler          | - Fidler        |
| Make                    | Bicron          | Bicron          |
| Model                   | Analyst         | Analyst         |
| Serial Number           | A945P           | A945P           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 11/21/2001      | 11/21/2001      |
| Probe                   | Nal Scintilator | Nal Scintilator |
| Make                    | Bicron          | Bicron          |
| Model                   | G-5             | G-5             |
| Serial Number           | A365Q           | A365Q           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 11/21/2001      | 11/21/2001      |
| Source                  | Am-241          | - Am-241        |
| Source type             | Low E gamma     | Low E gamma     |
| Calibration Date        | 4/10/2001       | 4/10/2001       |
| Out of Cal Date         | 3/31/2003       | 3/31/2003       |
| Serial Number           | 8920            | 8920            |
| Source emission rate    | · 254925 dpm    | 254925 dpm      |
| Instrument Channel      | Channel 1       | Out             |
| instrument efficiency   | 0.20%           | 0.50%           |
| 2 Sigma Range           | 544-660         | 5791-6367       |
| 3 Sigma Range           | 515-689         | 5647-6511       |

### SENECA ARMY DEPOT SEAD-12 RI/FS 7\_28front page

| Site: Seneca Army Depot |                 |                   |
|-------------------------|-----------------|-------------------|
| Project: SEAD-12        |                 |                   |
| Team:                   |                 |                   |
|                         | Page 400f       | 59                |
| Instrument Type         | Bicron Fidler-  | Bicron Fidler     |
| AKA                     | Fidler          | Fidler,           |
| Make                    | Bicron          | Bicron            |
| Model                   | Analyst         | Analyst           |
| Serial Number           | A945P           | A945P             |
| Calibration Date        | 5/25/2001       | 5/25/2001         |
| Out of Cal Date         | 11/21/2001      | 11/21/2001        |
| Probe                   | Nal Scintilator | Nal Scintilator 🧇 |
| Make                    | Bicron          | Bicron            |
| Model                   | G-5             | G-5               |
| Serial Number           | A365Q           | A365Q             |
| Calibration Date        | 5/25/2001       | 5/25/2001         |
| Out of Cal Date         | 11/21/2001      | 11/21/2001        |
| Source                  | Am-241          | Am-241            |
| Source type             | Low E gamma     | Low E gamma       |
| Calibration Date        | 4/10/2001       | 4/10/2001         |
| Out of Cal Date         | 3/31/2003       | 3/31/2003         |
| Serial Number           | 8920            | 8920              |
| Source emission rate    | 254925 dpm      | 254925 dpm        |
| Instrument Channel      | Channel 1       | Out               |
| instrument efficiency   | 0.20%           | 0.50%             |
| 2 Sigma Range           | 472-696         | 5791-6367         |
| 3 Sigma Range           | 416-752         | 564.7-6511        |

FIDLER Serial Number A945P/A378Q

| DATE: 7/28/01                       |                                          | PAGE 41 OF   | 59                | 1      |
|-------------------------------------|------------------------------------------|--------------|-------------------|--------|
| Source                              | en e | Am-241       |                   |        |
| Calibration Date                    |                                          | 5/25/2001    |                   |        |
| Out of Cal Date                     |                                          | 11/21/2001   |                   |        |
| Serial Number                       |                                          | A945P        | - 641 0           | L      |
| Source emission rate                |                                          | 254925 dpm   | 710400'           | luck   |
| Instrument Channel                  | CHANNEL 1                                | OUT          | $\langle \rangle$ | done   |
| High Voltage                        | Lil                                      | /            | $\geq$            | in     |
| Battery Check                       | ok                                       |              | $\geq$            | AFTONC |
| Source Check Reading (1)            | 667                                      |              | $\geq$            |        |
| Source Check Reading (2)            | 620                                      | 31           | $\geq$            |        |
| Source Check Reading (3)            | 630                                      |              | $\geq$            |        |
| Source Check Reading (4)            | 613                                      | /            | $\geq$            |        |
| Source Check Reading (5)            | 599                                      | /            | $\geq$            |        |
| Source Check Reading (AVERAGE)      | 626                                      | /            | >                 |        |
|                                     |                                          |              |                   |        |
| Direct Background reading (1)       | 230                                      | $\geq$       | $\geq$            |        |
| Direct Background reading (2)       | 198                                      | $\geq$       | $\geq$            |        |
| Direct Background reading (3)       | 219                                      | $\geq$       | $\geq$            |        |
| Direct Background reading (4)       | 231                                      |              | $\geq$            |        |
| Direct Background reading (5)       | 202                                      | $\geq$       | $\geq$            |        |
| Direct Background reading (AVERAGE) | 216                                      |              | >                 |        |
| Efficiency = (CPM-Background) / DPM | 0.16%                                    | NA           | $\times$          |        |
| MID-DAY SOURCE READING              | initial check                            | dive inchten | $\ge$             |        |
| MID-DAY BACKGROUND READING          | i.                                       | 4            | $\geq$            |        |
| EVENING SOURCE READING              | * %72                                    | KI-          | $\geq$            |        |
| EVENING BACKGROUND READING          | 110                                      | the state    | $\geq$            |        |
| Morning check performed by ///5     | RM/KK                                    |              | $\geq$            |        |
| Mid-day check performed by N/A      | NIA                                      | $\geq$       |                   |        |
| Evening check performed by 1615     | KK                                       |              |                   |        |

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\* Reading was now - but it soons to be a curchen of fintual y background We will chock in moun. y PARSONS ENGINEERING SCIENCE KUC 7/28/01
| DATE: 7/29/01                          | PAGE 42 OF 59 |                |            |  |  |
|----------------------------------------|---------------|----------------|------------|--|--|
| Source                                 | Am-241        |                |            |  |  |
| Calibration Date                       | 5/25/2001     |                |            |  |  |
| Out of Cal Date                        |               | 11/21/2001     |            |  |  |
| Serial Number                          |               | A945P          |            |  |  |
| Source emission rate                   |               | 254925 dpm 244 | Chlivin    |  |  |
| Instrument Channel                     | CHANNEL 1     | OUT            |            |  |  |
| High Voltage                           | E             | - 1.1          | $\geq$     |  |  |
| Battery Check                          | E             | Tok            | $\geq$     |  |  |
| Source Check Reading (1)               | 667           | /              | $\langle$  |  |  |
| Source Check Reading (2)               | 644           |                | $\langle$  |  |  |
| Source Check Reading (3)               | 641           | NY             | $\geq$     |  |  |
| Source Check Reading (4)               | 632           | 7              | $\langle$  |  |  |
| Source Check Reading (5)               | 630           |                | $\geq$     |  |  |
| Source Check Reading (AVERAGE)         | 642.0         | /              |            |  |  |
|                                        |               |                |            |  |  |
| Direct Background reading (1)          | 261           | $\ge$          | $\geq$     |  |  |
| Direct Background reading (2)          | 222           | $\geq$         | $\geq$     |  |  |
| Direct Background reading (3)          | 199           |                | $\geq$     |  |  |
| Direct Background reading (4)          | 222           | $\langle$      | $\langle$  |  |  |
| Direct Background reading (5)          | 244           | $\langle$      | $\langle$  |  |  |
| Direct Background reading (AVERAGE)    | 229.6         |                | $\geq$     |  |  |
| Efficiency = (CPM-Background) / DPM    | 0.16%         | NA             | $\searrow$ |  |  |
| MID-DAY SOURCE READING                 | 450           | 10196-041      | $\geq$     |  |  |
| MID-DAY BACKGROUND READING             | 60850the      | 175            | $\geq$     |  |  |
| EVENING SOURCE READING                 | 573           | - Al-          | $\geq$     |  |  |
| EVENING BACKGROUND READING             | 225           | 1              | $\geq$     |  |  |
| Morning check performed by Rm 70°      | Sunny 07:10   | $\geq$         | $\geq$     |  |  |
| Mid-day check performed by             | 72° Overense  | $\geq$         | $\geq$     |  |  |
| Evening check performed by Rom 4:05p 7 | 6" Outrest    |                | >          |  |  |

\*There some to be a lot of floxingtion in the children so where going to that the Greatings from this many 5 in the midding and 5 in prining + PARSONS ENGINEERING SCIENCE add those I to the initial duck dow on 7/27/01. The dut channel aways concernight in Disigna.

# FIDLER Serial Number A945P/A378Q

| DATE: 7/ 30/01                       |             | PAGE 43 OF | 59                |  |
|--------------------------------------|-------------|------------|-------------------|--|
| Source                               |             | Am-241     |                   |  |
| Calibration Date                     | 5/25/2001   |            |                   |  |
| Out of Cal Date                      | 11/21/2001  |            |                   |  |
| Serial Number                        |             | A945P      |                   |  |
| Source emission rate                 |             | 254925 dpm |                   |  |
|                                      | CHANNEL 1   | 001        | $\langle \rangle$ |  |
| High Voltage                         |             | <u> </u>   | $\langle$         |  |
| Battery Check                        |             | ok         | $\langle$         |  |
| Source Check Reading (1)             |             | 670        | $\geq$            |  |
| Source Check Reading (2)             | Showled     | 623        |                   |  |
| Source Check Reading (3)             | int int     | 682        |                   |  |
| Source Check Reading (4)             | 2m          | 608        |                   |  |
| Source Check Reading (5)             |             | 638        | $\geq$            |  |
| Source Check Reading (AVERAGE)       | 1           | - 644      | >                 |  |
|                                      |             |            |                   |  |
| Direct Background reading (1)        | 245         | $\geq$     | X                 |  |
| Direct Background reading (2)        | 220         | $\geq$     | $\geq$            |  |
| Direct Background reading (3)        | 211         | $\geq$     | $\geq$            |  |
| Direct Background reading (4)        | 195         |            | $\geq$            |  |
| Direct Background reading (5)        | 201         |            | $\geq$            |  |
| Direct Background reading (AVERAGE)  | 214         | $\geq$     |                   |  |
| Efficiency = (CPM-Background) / DPM  | 010010      | Artx       | $\times$          |  |
| MID-DAY SOURCE READING               | 660         | 1          | $\times$          |  |
| MID-DAY BACKGROUND READING           | 181         |            | >                 |  |
| EVENING SOURCE READING               | 521         | V          | >                 |  |
| EVENING BACKGROUND READING           | 189         | /          | >                 |  |
| Morning check performed by Rom 7:154 | To Supary   | >          | >                 |  |
| Mid-day check performed by 2m 12:05p | 70° averast | $\geq$     |                   |  |
| Evening check performed by Rom 5:050 | 76° overast | >          | ><                |  |

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| DATE: 1/31/PI                       |             | PAGE 44 OF | 59 |
|-------------------------------------|-------------|------------|----|
| Source                              |             | Am-241     |    |
| Calibration Date                    |             | 5/25/2001  |    |
| Out of Cal Date                     |             | A945D      |    |
| Source emission rate                |             | 254925 dpm |    |
| Instrument Channel                  | CHANNEL 1   | OUT        |    |
| High Voltage                        | 1.1         | 5 km       |    |
| Battery Check                       | ok          | /          |    |
| Source Check Reading (1)            | 655         |            |    |
| Source Check Reading (2)            | 619         | N/         |    |
| Source Check Reading (3)            | 617         |            |    |
| Source Check Reading (4)            | Q17         |            |    |
| Source Check Reading (5)            | 658         |            |    |
| Source Check Reading (AVERAGE)      | 633-2       |            |    |
|                                     |             |            |    |
| Direct Background reading (1)       | 242         | /          |    |
| Direct Background reading (2)       | 228         |            |    |
| Direct Background reading (3)       | 231         | Y          |    |
| Direct Background reading (4)       | 256         | 4          |    |
| Direct Background reading (5)       | 227         |            |    |
| Direct Background reading (AVERAGE) | 236.8       | /          |    |
| Efficiency = (CPM-Background) / DPM | 0,2%        | NA         |    |
| MID-DAY SOURCE READING              | 480         | 6117       |    |
| MID-DAY BACKGROUND READING          | 198         | 5328       |    |
| EVENING SOURCE READING              | 456         | 6080       |    |
| EVENING BACKGROUND READING          | 174         | 5007       |    |
| Morning check performed by Rom 7:0  | oon humidys | unny, 720  |    |
| Mid-day check performed by KLK 123  | 5 himiel, a | unny, 720  |    |
| Evening check performed by Rom 6:0  | sp humid, s | junny, 76° |    |

# FIDLER Serial Number A945P/A378Q

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| DATE: 8/1/01                        |           | PAGE 45 OF | - 59      | ]   |  |
|-------------------------------------|-----------|------------|-----------|-----|--|
| Saurce                              |           | Am-241     |           |     |  |
| Calibration Date                    |           | 5/25/2001  |           |     |  |
| Out of Cal Date                     |           | 11/21/2001 | 1641      | 20  |  |
| Serial Number                       |           | A945P      | 7104000   | 1   |  |
| Instrument Channel                  | CHANNEL 1 | OUT        | 10,400 65 | -00 |  |
| High Voltage                        | 1.1       | 1.1        | $\leq$    | 1   |  |
| Battery Check                       | ok        | OK         | $\leq$    |     |  |
| Source Check Reading (1)            | 589       | 6440       | $\ge$     | ]   |  |
| Source Check Reading (2)            | 631       | 6427       | $\geq$    |     |  |
| Source Check Reading (3)            | 638       | 6339       | $\geq$    |     |  |
| Source Check Reading (4)            | 606       | 6292       | $\geq$    | 1   |  |
| Source Check Reading (5)            | 611       | 6289       | $\geq$    |     |  |
| Source Check Reading (AVERAGE)      | 615       | 6357       |           |     |  |
|                                     |           |            |           |     |  |
| Direct Background reading (1)       | 220       | 5388       | $\geq$    |     |  |
| Direct Background reading (2)       | 215       | 5290       | $\geq$    |     |  |
| Direct Background reading (3)       | 243       | 5241       | $\geq$    |     |  |
| Direct Background reading (4)       | 217       | 5244       | $\geq$    |     |  |
| Direct Background reading (5)       | 216       | 5407       |           |     |  |
| Direct Background reading (AVERAGE) | 222       | 5314       | >         |     |  |
| Efficiency = (CPM-Background) / DPM | 2.15%     | 2,15%      | >         | ].  |  |
| MID-DAY SOURCE READING              | 485       | 5993       | $\ge$     |     |  |
| MID-DAY BACKGROUND READING          | 172       | 5130       | >>        | 1   |  |
| EVENING SOURCE READING              | Notuse    | dippn      | $\geq$    | ]   |  |
| EVENING BACKGROUND READING          |           | - KIK      | $\ge$     |     |  |
| Morning check performed by humid    | Rom Sunny | 72° 7-152  | $\geq$    |     |  |
| Mid-day check performed by          | KIK "     | 78° 1250   | $\geq$    |     |  |
| Evening check performed by          | notice    | lin pm     |           |     |  |

| DATE: 8/8/01                         |              | PAGE 46 OF | 59      |  |
|--------------------------------------|--------------|------------|---------|--|
| Source                               | the star and | Am-241     | A       |  |
| Calibration Date                     |              | 5/25/2001  |         |  |
| Out of Cal Date                      | 11/21/2001   |            |         |  |
| Source emission rate                 |              | 254925 dpm | 1710400 |  |
| Instrument Channel                   | CHANNEL 1    | OUT        |         |  |
| High Voltage                         | 1            | 1.08       | $\geq$  |  |
| Battery Check                        |              | de.        | $\geq$  |  |
| Source Check Reading (1)             |              | 6279       | $\geq$  |  |
| Source Check Reading (2)             | J.           | 6200       | $\geq$  |  |
| Source Check Reading (3)             | ×/           | 6363       | $\geq$  |  |
| Source Check Reading (4)             | /            | 6336       | $\geq$  |  |
| Source Check Reading (5)             |              | 6259       | $\geq$  |  |
| Source Check Reading (AVERAGE)       |              | 6287       | $\geq$  |  |
|                                      |              |            |         |  |
| Direct Background reading (1)        |              | 5433       | $\geq$  |  |
| Direct Background reading (2)        |              | .5446      | $\geq$  |  |
| Direct Background reading (3)        | W            | 5450       | $\geq$  |  |
| Direct Background reading (4)        | Ý            | 5431       | $\geq$  |  |
| Direct Background reading (5)        |              | 5368       | $\geq$  |  |
| Direct Background reading (AVERAGE)  |              | 5426       | $\geq$  |  |
| Efficiency = (CPM-Background) / DPM  | NX           | 0.12%      | $\geq$  |  |
| MID-DAY SOURCE READING               | rite         | 6432/627   | $\geq$  |  |
| MID-DAY BACKGROUND READING           |              | 5205       | $\geq$  |  |
| EVENING SOURCE READING               | ALC UCO      | IN PAA     | $\geq$  |  |
| EVENING BACKGROUND READING           | NOT USED     |            | $\geq$  |  |
| Morning check performed by huid warn | JRef 0740    | N          | $\geq$  |  |
| Mid-day check performed by Sunny hot | JR4 1115     | - V        | $\geq$  |  |
| Evening check performed by           | NA           | /          | >       |  |

# FIDLER Serial Number A945P/A378Q

| DATE: 8/9/01                          |                                  | PAGE 47 0 | F 59       |  |
|---------------------------------------|----------------------------------|-----------|------------|--|
| Source                                | State and the Barrow State State | Am-241    |            |  |
| Calibration Date                      |                                  | 5/25/2001 |            |  |
| Out of Cal Date                       | 11/21/2001                       |           |            |  |
| Serial Number                         |                                  | A945P     |            |  |
| Instrument Channel                    | CHANNEL 1                        |           | 710400     |  |
| High Voltage                          | 1.08                             | 1.08      | $\leq$     |  |
| Battery Check                         | OK                               | sic       | $\ge$      |  |
| Source Check Reading (1)              | 575                              | 6430      | $\geq$     |  |
| Source Check Reading (2)              | 570                              | 6214      | $\geq$     |  |
| Source Check Reading (3)              | 556                              | 6396      | $\geq$     |  |
| Source Check Reading (4)              | 591                              | 6122      | $\geq$     |  |
| Source Check Reading (5)              | 563                              | 6355      | >          |  |
| Source Check Reading (AVERAGE)        | 571                              | 6303      | >          |  |
|                                       |                                  |           |            |  |
| Direct Background reading (1)         | 226                              | 5379      | X          |  |
| Direct Background reading (2)         | 223                              | 5418      |            |  |
| Direct Background reading (3)         | 226                              | 5221      | $\geq$     |  |
| Direct Background reading (4)         | 203                              | 5281      | $\searrow$ |  |
| Direct Background reading (5)         | 221                              | 5337      | ><         |  |
| Direct Background reading (AVERAGE)   | 220                              | 5327      | >          |  |
|                                       |                                  |           |            |  |
| Efficiency = (CPM-Background) / DPM   | 0.14%                            | 0.14%     |            |  |
| MID-DAY SOURCE READING                | 493                              | 10362     | $\ge$      |  |
| MID-DAY BACKGROUND READING            | 2.00                             | 5300      | $\sim$     |  |
| EVENING SOURCE READING                | 527                              | 6243      | >          |  |
| EVENING BACKGROUND READING            | 214                              | 5509      | $\geq$     |  |
| Morning check performed by worm humid | JRH 0745                         | MA        | > <        |  |
| Mid-day check performed by 20 *       | JR4 1150                         | NA        | $\geq$     |  |
| Evening check performed by Rom CIO    | a humid area                     | cest 83°  | ><         |  |

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# FIDLER Serial Number A945P/A378Q

| DATE: 8/10/01                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE 48 OF   | 59              |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|
| Source                                  | the second secon | Am-241       |                 |
| Calibration Date                        | 5/25/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |                 |
| Out of Cal Date                         | 11/21/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |                 |
| Serial Number                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A945P        | 10101100        |
| Source emission rate                    | CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 254925 apm   | 710400 dpm      |
| High Voltage                            | 1.08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1-08         | $\triangleleft$ |
| Battery Check                           | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ok           | >>              |
| Source Check Reading (1)                | 583                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6246         | $\ge$           |
| Source Check Reading (2)                | 589                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6415         |                 |
| Source Check Reading (3)                | 542                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6362         |                 |
| Source Check Reading (4)                | 576                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6481         | $\geq$          |
| Source Check Reading (5)                | 573                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6331         | $\geq$          |
| Source Check Reading (AVERAGE)          | 573                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6367         | >               |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |
| Direct Background reading (1)           | 209                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5467         | $\ge$           |
| Direct Background reading (2)           | 231                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5407         |                 |
| Direct Background reading (3)           | 220                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5483         | >               |
| Direct Background reading (4)           | 212                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5484         | >               |
| Direct Background reading (5)           | 217                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5397         | >               |
| Direct Background reading (AVERAGE)     | 217.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5448         | >               |
| Efficiency = (CPM-Background) / DPM     | 0.14%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.13%        | $\ge$           |
| MID-DAY SOURCE READING                  | 548                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6499         | $\times$        |
| MID-DAY BACKGROUND READING              | Pm 5195178                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Pm1785195    | >>              |
| EVENING SOURCE READING                  | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6227         | >               |
| EVENING BACKGROUND READING              | 179                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5127         | >               |
| Morning check performed by worn hund    | JR4 0800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | overcent     | $\geq$          |
| Mid-day check performed by humid 80°    | Pom 12:470                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | mostly Swany | $\geq$          |
| Evening check performed by SVAAY worn ? | JR11 1749                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA           | >               |

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### FIDLER Serial Number A945P/A378Q

| DATE: &/11/01                       |           | PAGE 49 OF      | 59                |
|-------------------------------------|-----------|-----------------|-------------------|
| Source                              |           | Am-241          |                   |
| Calibration Date                    | 5/25/2001 |                 |                   |
| Out of Cal Date                     |           | 11/21/2001      |                   |
| Serial Number                       |           | A945P           |                   |
| Source emission rate                |           | 0UT             | 710400 dpm(out)   |
|                                     | CHANNELT  | 001             | $\langle \rangle$ |
| High Voltage                        | 1,08      | 1.08            | $\sim$            |
| Battery Check                       | ok        | ok              | $\geq$            |
| Source Check Reading (1)            | 618       | 6328            | $\geq$            |
| Source Check Reading (2)            | 607       | 6359            | $\geq$            |
| Source Check Reading (3)            | 613       | 6223            | $\geq$            |
| Source Check Reading (4)            | 620       | 6267            | $\geq$            |
| Source Check Reading (5)            | 573       | 6250            | $\geq$            |
| Source Check Reading (AVERAGE)      | 607.8     | 6285            | >                 |
|                                     |           |                 |                   |
| Direct Background reading (1)       | 213       | 5445            | $\ge$             |
| Direct Background reading (2)       | 220       | 5439            | X                 |
| Direct Background reading (3)       | 239       | 5211            | $\backslash$      |
| Direct Background reading (4)       | 218       | 5329            | X                 |
| Direct Background reading (5)       | 231       | 5358            | $\backslash$      |
| Direct Background reading (AVERAGE) | 224       | 5356            | >                 |
|                                     |           |                 |                   |
| Efficiency = (CPM-Background) / DPM | 0.15%     | 0.13%           | >                 |
|                                     | 400       | 6120            |                   |
|                                     | 180       | 527.1           | $\langle \rangle$ |
| MID-DAY BACKGROUND READING          | 100       | SET             | $\langle \rangle$ |
| EVENING SOURCE READING              | 460       | 6415            | $\sim$            |
| EVENING BACKGROUND READING          | 232       | 5247            | $\geq$            |
| Morning check performed by 78°F     | JR4 0839  | Worm not so wet |                   |
| Mid-day check performed by 78 °F    | JRH 1200  | SUMMY WORM      | X                 |
| Evening check performed by          | Pom Goop  | Sunny           |                   |

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| DATE: C/12/01                       |             | PAGE 50 OF       | 59                |  |
|-------------------------------------|-------------|------------------|-------------------|--|
| Source                              | Alexander I | Am-241           |                   |  |
| Calibration Date                    |             | 5/25/2001        |                   |  |
| Out of Cal Date                     | 11/21/2001  |                  |                   |  |
| Serial Number                       |             | A945P            | 1 - 11 - 0 - 1    |  |
| Source emission rate                |             | AL) 254925 dpm / | 710400 (00+)      |  |
| Instrument Channel                  | CHANNEL 1   | 001              | $\langle \rangle$ |  |
| High Voltage                        | 1.08        | 1.08             | $\langle$         |  |
| Battery Check                       | OK          | ok               | $\geq$            |  |
| Source Check Reading (1)            | 600         | 64.50            | $\geq$            |  |
| Source Check Reading (2)            | 559         | 6412             | $\geq$            |  |
| Source Check Reading (3)            | 613         | 6277             | $\geq$            |  |
| Source Check Reading (4)            | 553         | 6597 6479        | $\geq$            |  |
| Source Check Reading (5)            | 582         | 6525             | >                 |  |
| Source Check Reading (AVERAGE)      | 581         | 6442 ok          | >                 |  |
|                                     |             |                  |                   |  |
| Direct Background reading (1)       | 216         | 5452             | $\ge$             |  |
| Direct Background reading (2)       | 207         | 5348             | >                 |  |
| Direct Background reading (3)       | 222         | 5469             | >                 |  |
| Direct Background reading (4)       | 208         | 5504             | >                 |  |
| Direct Background reading (5)       | 201         | 5458             |                   |  |
| Direct Background reading (AVERAGE) | 211         | 5446             | >                 |  |
| Efficiency = (CPM-Background) / DPM | 0.15%       | 0.14%            | >                 |  |
|                                     | (587        | 6304             | $\searrow$        |  |
| MID-DAY BACKGROUND READING          | 200         | 5451             |                   |  |
|                                     | 1-110       |                  | $\sim$            |  |
|                                     | OT USE      | PIN MM           | $\leq$            |  |
| Morning check performed by 76 F     | JRH USON    | Surry mild       | >>                |  |
| Mid-day check performed by 60°,-    | pom 12:00   | o over cast      | >                 |  |
| Evening check performed by          | MA          | NA               | $\searrow$        |  |

| DATE: 4/13/01                       |           | PAGE SI OF         | 59              |  |  |
|-------------------------------------|-----------|--------------------|-----------------|--|--|
| Source                              | Am-241    |                    |                 |  |  |
| Calibration Date                    |           | 5/25/2001          |                 |  |  |
| Out of Cal Date                     |           | 11/21/2001         |                 |  |  |
| Serial Number                       |           | A945P              |                 |  |  |
| Instrument Channel                  |           |                    | 710400 1 (007)  |  |  |
| High Voltage                        | 1.08      | 1.08               | $\triangleleft$ |  |  |
| Battery Check                       | ok.       | olc                | $\sim$          |  |  |
| Source Check Reading (1)            | 607       | 5929 6364          | $\geq$          |  |  |
| Source Check Reading (2)            | 615       | 6185               | $\geq$          |  |  |
| Source Check Reading (3)            | 606       | 6219               | $\geq$          |  |  |
| Source Check Reading (4)            | 624       | 6284               | $\geq$          |  |  |
| Source Check Reading (5)            | 645       | 6505               | $\geq$          |  |  |
| Source Check Reading (AVERAGE)      | 619       | 6311               |                 |  |  |
|                                     |           |                    |                 |  |  |
| Direct Background reading (1)       | 223       | 5344               | $\ge$           |  |  |
| Direct Background reading (2)       | 204       | 5276               | $\geq$          |  |  |
| Direct Background reading (3)       | 218       | 5464               | $\geq$          |  |  |
| Direct Background reading (4)       | 200       | 5474               | $\geq$          |  |  |
| Direct Background reading (5)       | 213       | 5423               | $\geq$          |  |  |
| Direct Background reading (AVERAGE) | 212       | 5396               | >               |  |  |
| Efficiency = (CPM-Background) / DPM | 0.16%     | 0:13%              | $\searrow$      |  |  |
| MID-DAY SOURCE READING              | 502       | 6197               | >               |  |  |
| MID-DAY BACKGROUND READING          | 167       | 5271               | $\geq$          |  |  |
|                                     | INT ISPA  | N DAA              |                 |  |  |
| EVENING BACKGROUND READING          |           | r FIV (            | $\sim$          |  |  |
| Morning check performed by          | VIRL 0804 | Partly SUMAY ~70.F | $\geq$          |  |  |
| Mid-day check performed by          | Rom 1:10p | mostly Sunny 807   | $\sim$          |  |  |
| Evening check performed by          | -NA       |                    |                 |  |  |

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| DATE: 8/14/01                       |             | PAGE 52 OF 59   |                |  |  |
|-------------------------------------|-------------|-----------------|----------------|--|--|
| Source                              |             | Am-241          |                |  |  |
| Calibration Date                    |             | 5/25/2001       |                |  |  |
| Serial Number                       |             | A945P           |                |  |  |
| Source emission rate                | lch         | 1) 254925 dpm / | 710400 dpm (at |  |  |
| Instrument Channel                  | CHANNEL 1   | OUT             | N              |  |  |
| High Voltage                        | 1.08        | 1.08            | $\geq$         |  |  |
| Battery Check                       | ok          | at              |                |  |  |
| Source Check Reading (1)            | 620         | 6371            | $\geq$         |  |  |
| Source Check Reading (2)            | 645         | 6533            | $\geq$         |  |  |
| Source Check Reading (3)            | 630         | +6615 6365      | $\geq$         |  |  |
| Source Check Reading (4)            | 604         | 6494            | $\geq$         |  |  |
| Source Check Reading (5)            | 618         | 6493            | $\geq$         |  |  |
| Source Check Reading (AVERAGE)      | 623         | 6451 ok         | >              |  |  |
|                                     |             |                 |                |  |  |
| Direct Background reading (1)       | 225         | 5455            |                |  |  |
| Direct Background reading (2)       | 241         | 5320            |                |  |  |
| Direct Background reading (3)       | 226         | 5367            |                |  |  |
| Direct Background reading (4)       | 225         | 5376            | >              |  |  |
| Direct Background reading (5)       | 224         | 5357            |                |  |  |
| Direct Background reading (AVERAGE) | 228         | 5375            | >              |  |  |
| Efficiency = (CPM-Background) / DPM | 0.15%       | 0.15%           | $\times$       |  |  |
| MID-DAY SOURCE READING              | 572         | 6273            | >              |  |  |
| MID-DAY BACKGROUND READING          | 208         | 5214            | > <            |  |  |
| EVENING SOURCE READING              | 508         | 6296            | >              |  |  |
| EVENING BACKGROUND READING          | 188         | 5262            | >              |  |  |
| Morning check performed by          | 11 JRH 0810 | Cool mish       | > <            |  |  |
| Mid-day check performed by          | Rom 12-30p  | 76° Sunny       | $\geq$         |  |  |
| Evening check performed by          | JRH 1700    | SUMY 78°F       | $\times$       |  |  |

### FIDLER Serial Number A945P/A378Q

| DATE: 8/20/01                       |           | PAGE 53 OF  | 59              |  |  |
|-------------------------------------|-----------|-------------|-----------------|--|--|
| Source                              | Am-241    |             |                 |  |  |
| Calibration Date                    |           | 5/25/2001   |                 |  |  |
| Out of Cal Date                     |           | 11/21/2001  |                 |  |  |
| Serial Number                       |           | A945P       |                 |  |  |
| Instrument Channel                  | CHANNEL 1 |             | FI0400 apmL(h1) |  |  |
| High Voltage                        | 1.08      | 1.08        | $\leq$          |  |  |
| Battery Check                       | ok        | OL mille    | $\geq$          |  |  |
| Source Check Reading (1)            | 607       | 6424        | $\geq$          |  |  |
| Source Check Reading (2)            | 606       | 6312        | $\geq$          |  |  |
| Source Check Reading (3)            | 577       | 6431        | $\geq$          |  |  |
| Source Check Reading (4)            | 607       | 6537        | $\geq$          |  |  |
| Source Check Reading (5)            | 596       | 6308        | $\geq$          |  |  |
| Source Check Reading (AVERAGE)      | 599       | 6402        | >               |  |  |
|                                     |           |             |                 |  |  |
| Direct Background reading (1)       | 192       | 5225        | $\ge$           |  |  |
| Direct Background reading (2)       | 203       | 5257        | $\geq$          |  |  |
| Direct Background reading (3)       | 217       | 5269        | $\geq$          |  |  |
| Direct Background reading (4)       | 221       | 5321        | $\geq$          |  |  |
| Direct Background reading (5)       | 235       | 5194        | $\geq$          |  |  |
| Direct Background reading (AVERAGE) | 214       | 5253        | $\ge$           |  |  |
| Efficiency = (CPM-Background) / DPM | 0.15%     | 0.16%       | $\times$        |  |  |
| MID-DAY SOURCE READING              | 167552    | 6236        | $\times$        |  |  |
| MID-DAY BACKGROUND READING          | 167       | 5291        | >               |  |  |
| EVENING SOURCE READING              | 546       | 6353        | >               |  |  |
| EVENING BACKGROUND READING          | 196       | 5092        | >               |  |  |
| Morning check performed by          | JRH 0935  | Surry worn  | >               |  |  |
| Mid-day check performed by          | Silt 1219 | Shill surry | $\geq$          |  |  |
| Evening check performed by          | -12H 1615 | stil suny   | > <             |  |  |

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Check out chanel again in PM -OKin - Background wigh in AM

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PARSONS ENGINEERING SCIENCE

### FIDLER Serial Number A945P/A378Q

| DATE: 8/21/2001                     |            | PAGE 54 OF       | 59                |  |
|-------------------------------------|------------|------------------|-------------------|--|
| Source                              | Am-241     |                  |                   |  |
| Calibration Date                    | 5/25/2001  |                  |                   |  |
| Out of Cal Date                     | 11/21/2001 |                  |                   |  |
| Serial Number                       | 1          | A945P            |                   |  |
| Source emission rate                |            | M) 254925 dpm /7 | -loyoodph lout)   |  |
|                                     |            | 1 -0             | $\bigcirc$        |  |
| High Voltage                        | 1.00       | 1.05             | $\langle \rangle$ |  |
| Battery Check                       | OK         | ok               | $\sim$            |  |
| Source Check Reading (1)            | 626        | 6536 6467        | $\geq$            |  |
| Source Check Reading (2)            | 576        | 6500             | $\geq$            |  |
| Source Check Reading (3)            | 644        | 6514             | $\geq$            |  |
| Source Check Reading (4)            | 647        | 6370             | >                 |  |
| Source Check Reading (5)            | 608        | 6408             | >                 |  |
| Source Check Reading (AVERAGE)      | 620        | 6452 de          | $\searrow$        |  |
|                                     |            |                  |                   |  |
| Direct Background reading (1)       | 192        | 5314             | $\geq$            |  |
| Direct Background reading (2)       | 193        | 5343             | >                 |  |
| Direct Background reading (3)       | 188        | 5301             | $\searrow$        |  |
| Direct Background reading (4)       | 203        | 5222             | >                 |  |
| Direct Background reading (5)       | 216        | 5200             | >                 |  |
| Direct Background reading (AVERAGE) | 198        | 5276             | $\ge$             |  |
| Efficiency = (CPM-Background) / DPM | 0.17%      | 0.17%            | >                 |  |
| MID-DAY SOURCE READING              | 607        | 6198 de          | >                 |  |
| MID-DAY BACKGROUND READING          | 192        | 5185.            | >                 |  |
| EVENING SOURCE READING              | 527        | 6246 ole         | >                 |  |
| EVENING BACKGROUND READING          | 182        | 5227             | > <               |  |
| Morning check performed by          | JRH 0800 0 | Nercast weier    | > <               |  |
| Mid-day check performed by          | iet 1224   | u le             | >                 |  |
| Evening check performed by          | IRH 1737   | suny war         | $\geq$            |  |

- Charged battery during AM Function check PARSONS ENGINEERING SCIENCE look at open window during juilday checks

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# FIDLER Serial Number A945P/A378Q

| DATE: E/22/01                       |            | PAGE 55 OF        | 59                |  |
|-------------------------------------|------------|-------------------|-------------------|--|
| Source                              | Am-241.    |                   |                   |  |
| Calibration Date                    | 5/25/2001  |                   |                   |  |
| Out of Cal Date                     | 11/21/2001 |                   |                   |  |
| Serial Number                       |            | A945P             |                   |  |
| Source emission rate                |            | AI) 254925 dpm /7 | 10400dpm[out)     |  |
| Instrument Channel                  | CHANNEL 1  | 001               | $\langle \rangle$ |  |
| High Voltage                        | 1.08       | 1.08              | $\geq$            |  |
| Battery Check                       | ok         | ok                | $\geq$            |  |
| Source Check Reading (1)            | 624        | 6522              | $\geq$            |  |
| Source Check Reading (2)            | 644        | 6371              | $\geq$            |  |
| Source Check Reading (3)            | 614        | 6452              | $\geq$            |  |
| Source Check Reading (4)            | 584        | 6465              | $\geq$            |  |
| Source Check Reading (5)            | 624        | 6497              | ><                |  |
| Source Check Reading (AVERAGE)      | 618        | 6461 .            | >                 |  |
|                                     |            |                   |                   |  |
| Direct Background reading (1)       | 183        | .5246             | $\ge$             |  |
| Direct Background reading (2)       | 220        | 5321              | $\geq$            |  |
| Direct Background reading (3)       | 21.5       | 5368              |                   |  |
| Direct Background reading (4)       | 205        | 5316              | >                 |  |
| Direct Background reading (5)       | 211        | 5357              |                   |  |
| Direct Background reading (AVERAGE) | 207        | 5322              | >                 |  |
|                                     |            |                   |                   |  |
| Efficiency = (CPM-Background) / DPM | 0,16%0     | 0.1670            |                   |  |
| MID-DAY SOURCE READING              | 542        | 6311              | X                 |  |
| MID-DAY BACKGROUND READING          | 212        | 5177              | >                 |  |
| EVENING SOURCE READING              | 465        | 6307              | X                 |  |
| EVENING BACKGROUND READING          | 174        | 5293              | $\searrow$        |  |
| Morning check performed by          | JR4 0740   | Sumyoul           | $\geq$            |  |
| Mid-day check performed by          | JEH 1517   | sumy rorm         |                   |  |
| Evening check performed by          | NR4 1700   | SUMY Worn         | >                 |  |

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AM > 20 but will re-check

| DATE: 8/23/01                       |            | PAGE 56 OF       | 59                |  |  |
|-------------------------------------|------------|------------------|-------------------|--|--|
| Source                              |            | Am-241           |                   |  |  |
| Calibration Date                    |            | 5/25/2001        |                   |  |  |
| Out of Cal Date                     |            | 11/21/2001       |                   |  |  |
| Serial NUMber                       | 1.         | 1. 254925 dnm /a | unitoriday (net)  |  |  |
| Instrument Channel                  | CHANNEL 1  | OUT              | Toyourpm cut )    |  |  |
| High Voltage                        | 1.08       | 1.08             | >                 |  |  |
| Battery Check                       | oK         | ck               | $\geq$            |  |  |
| Source Check Reading (1)            | 564        | 6434             | $\geq$            |  |  |
| Source Check Reading (2)            | 521        | 6450             | $\geq$            |  |  |
| Source Check Reading (3)            | 509        | 6427             | $\langle \rangle$ |  |  |
| Source Check Reading (4)            | 585        | 6527             | $\geq$            |  |  |
| Source Check Reading (5)            | 524        | 6340             |                   |  |  |
| Source Check Reading (AVERAGE)      | 541        | 6436             | >                 |  |  |
|                                     |            |                  |                   |  |  |
| Direct Background reading (1)       | 198        | 5366             | $\geq$            |  |  |
| Direct Background reading (2)       | 185        | 5245             | $\geq$            |  |  |
| Direct Background reading (3)       | 196        | 5265             | $\geq$            |  |  |
| Direct Background reading (4)       | 201        | 5503             | $\geq$            |  |  |
| Direct Background reading (5)       | 225        | 5411             | $\geq$            |  |  |
| Direct Background reading (AVERAGE) | * 201      | 5.362            | >                 |  |  |
| Efficiency = (CPM-Background) / DPM | 0.13%      | 0.15%            | >                 |  |  |
| MID-DAY SOURCE READING              | 534        | 6634.            | > <               |  |  |
| MID-DAY BACKGROUND READING          | 191        | 5447             | > <               |  |  |
| EVENING SOURCE READING              | 514        | 6403 RS          |                   |  |  |
| EVENING BACKGROUND READING          | 157        | 4733 5376        | $\geq$            |  |  |
| Morning check performed by          | JRH UEDO   | Sony             | $\geq$            |  |  |
| Mid-day check performed by          | JR4 1237   | Partly som y     | >                 |  |  |
| Evening check performed by nomic    | l fim Sipp | Port Sunny 76'   | $\geq$            |  |  |

-> Inimment left on overnight " [1] PARSONS ENGINEERING SCIENCE" out " >26 in AM

FIDLER Serial Number A945P/A378Q

| DATE: \$ 26 01                      |            | PAGE 57 0    | F 59            |  |
|-------------------------------------|------------|--------------|-----------------|--|
| Source                              | Am-241     |              |                 |  |
| Calibration Date                    | 5/25/2001  |              |                 |  |
| Out of Cal Date                     | 11/21/2001 |              |                 |  |
| Source emission rate                | 6          | 254925 dnm / | 210400 dom/out) |  |
| Instrument Channel                  | CHANNEL 1  | OUT          |                 |  |
| High Voltage                        | 1.10       | 1.10         | $\geq$          |  |
| Battery Check                       | oK,        | ole          | X               |  |
| Source Check Reading (1)            |            | 6357         | $\geq$          |  |
| Source Check Reading (2)            |            | 6509         | $\geq$          |  |
| Source Check Reading (3)            |            | 6436         | $\geq$          |  |
| Source Check Reading (4)            |            | 6484         | $\geq$          |  |
| Source Check Reading (5)            |            | 6422         | $\geq$          |  |
| Source Check Reading (AVERAGE)      |            | 6441.6       | >               |  |
|                                     |            |              |                 |  |
| Direct Background reading (1)       | /          | 5324         | $\searrow$      |  |
| Direct Background reading (2)       |            | 5377         | >               |  |
| Direct Background reading (3)       |            | 5262         | $\geq$          |  |
| Direct Background reading (4)       | *          | 5396         | $\geq$          |  |
| Direct Background reading (5)       |            | 5463         | $\geq$          |  |
| Direct Background reading (AVERAGE) |            | 5364         | $\geq$          |  |
| Efficiency = (CPM-Background) / DPM | MA         | 0.15%        | $\searrow$      |  |
| MID-DAY SOURCE READING              |            | VX           | $\ge$           |  |
| MID-DAY BACKGROUND READING          | 12th       | -            | $\geq$          |  |
| EVENING SOURCE READING              |            | 6243         | $\geq$          |  |
| EVENING BACKGROUND READING          | 5310 0     | 5310         | $\geq$          |  |
| Morning check performed by          | NA         | NA           | $\geq$          |  |
| Mid-day check performed by          | JRU 1253   | P. Suny 78 F | $\geq$          |  |
| Evening check performed by          | kan 1625   | NA           |                 |  |

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(Chi) AM-241 chand not recensary today

| DATE: 8/27/01                       |           | PAGE 58 OF | 59                                      |  |  |
|-------------------------------------|-----------|------------|-----------------------------------------|--|--|
| Source                              |           | Am-241 -   |                                         |  |  |
| Calibration Date                    |           | 5/25/2001  |                                         |  |  |
| Out of Gal Date                     |           | 11/21/2001 |                                         |  |  |
| Source emission rate                | 1.        | A945P      | ZINUMA (AULT)                           |  |  |
| Instrument Channel                  | CHANNEL 1 | OUT        | ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) |  |  |
| High Voltage                        | 1.10      | YE         | $\geq$                                  |  |  |
| Battery Check                       | ok        | /          | $\geq$                                  |  |  |
| Source Check Reading (1)            | 546       | 6470       | $\geq$                                  |  |  |
| Source Check Reading (2)            | 545       | 6402       | $\geq$                                  |  |  |
| Source Check Reading (3)            | 581       | 6362       | $\geq$                                  |  |  |
| Source Check Reading (4)            | 537       | 6570       | $\geq$                                  |  |  |
| Source Check Reading (5)            | 576       | 6232       | $\geq$                                  |  |  |
| Source Check Reading (AVERAGE)      | W547 557  | 6395       | >                                       |  |  |
|                                     |           |            |                                         |  |  |
| Direct Background reading (1)       | 177       | 5176       | $\geq$                                  |  |  |
| Direct Background reading (2)       | 192       | 5361       | $\geq$                                  |  |  |
| Direct Background reading (3)       | 172       | 5448       | $\geq$                                  |  |  |
| Direct Background reading (4)       | 198       | 5365       | $\geq$                                  |  |  |
| Direct Background reading (5)       | 210       | 5171       | $\geq$                                  |  |  |
| Direct Background reading (AVERAGE) | 189.8     | 5364.Jun   | $\geq$                                  |  |  |
| Efficiency = (CPM-Background) / DPM | 0.14%     | 0.15%      | >                                       |  |  |
|                                     | 1.74      | 6251       |                                         |  |  |
|                                     | 114       | CU11       | $\langle \rangle$                       |  |  |
| MID-DAY BACKGROUND READING          | 167       | .5144      | $\langle \rangle$                       |  |  |
| EVENING SOURCE READING              | 547       | 6514       | $\langle \rangle$                       |  |  |
| EVENING BACKGROUND READING          | 144       | 500'       | $\langle$                               |  |  |
| Morning check performed by          | NKH 0840  | nunic      | $\langle$                               |  |  |
| Mid-day check performed by          | URH 1500  | suny       | $\sim$                                  |  |  |
| Evening check performed by          | KLK 1800  | NA         | >                                       |  |  |

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### FIDLER Serial Number A945P/A378Q

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| DATE: 8.28.01                       | PAGE 59 OF 59 |                 |                  |  |  |
|-------------------------------------|---------------|-----------------|------------------|--|--|
| Source                              | Am-241        |                 |                  |  |  |
| Calibration Date                    | _             | 5/25/2001       |                  |  |  |
| Out of Cal Date                     |               | 11/21/2001      |                  |  |  |
| Serial Number                       |               | A945P           |                  |  |  |
| Instrument Channel                  | CHANNEL 1     | OUT             | FIDY DU domLout) |  |  |
| High Voltage                        | 01.]          | ok (.10         | $\leq$           |  |  |
| Battery Check                       | бК            | ck              | $\geq$           |  |  |
| Source Check Reading (1)            | .518          | 6643            |                  |  |  |
| Source Check Reading (2)            | 557           | 6571            | $\geq$           |  |  |
| Source Check Reading (3)            | 610           | 6621            | $\geq$           |  |  |
| Source Check Reading (4)            | 542           | 6605            | $\geq$           |  |  |
| Source Check Reading (5)            | 616           | 6655            | $\geq$           |  |  |
| Source Check Reading (AVERAGE)      | 569           | 6619            | >                |  |  |
|                                     |               |                 |                  |  |  |
| Direct Background reading (1)       | 201           | 5532            | $\ge$            |  |  |
| Direct Background reading (2)       | 172           | 5403            | $\geq$           |  |  |
| Direct Background reading (3)       | 207           | 5394            | $\geq$           |  |  |
| Direct Background reading (4)       | 173           | 5433            | >                |  |  |
| Direct Background reading (5)       | 225           | 5357            | >                |  |  |
| Direct Background reading (AVERAGE) | 196           | 5424            | >                |  |  |
| Efficiency = (CPM-Background) / DPM | 0.15%         | 0.17%           | $\times$         |  |  |
| MID-DAY SOURCE READING              | 606 -         | 6949            | $\times$         |  |  |
| MID-DAY BACKGROUND READING          | 221           | 5700            | $\searrow$       |  |  |
| EVENING SOURCE READING              | 531           | 6634            | >                |  |  |
| EVENING BACKGROUND READING          | 194           | 5324            | >                |  |  |
| Morning check performed by          | JALY 0725     | surry cool wist | $\geq$           |  |  |
| Mid-day check performed by          | KATLE         | Jany            | $\geq$           |  |  |
| Evening check performed by          | Koti 2015     | NA              | >                |  |  |

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| Site: Seneca Army Depot |                 |                 |
|-------------------------|-----------------|-----------------|
| Project: SEAD-12        |                 |                 |
| Team:                   |                 |                 |
|                         | Page 1 of D     |                 |
| Instrument Type         | Bicron Fidler   | Bicron Fidler   |
| AKA                     | Fidler          | Fidler          |
| Make                    | Bicron          | Bicron          |
| Model                   | Analyst         | Analyst         |
| Serial Number           | A954P           | A954P           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 10/21/2001      | 10/21/2001      |
| Probe                   | Nal Scintilator | Nal Scintilator |
| Make                    | Bicron          | Bicron          |
| Model                   | G-5             | G-5             |
| Serial Number           | A365Q           | A365Q           |
| Calibration Date        | 5/25/2001       | 5/25/2001       |
| Out of Cal Date         | 10/21/2001      | 10/21/2001      |
| Source                  | Am-241          | Am-241          |
| Source type             | Low E'gamma     | 🕂 Low E gamma 📑 |
| Calibration Date        | 4/10/2001       | 4/10/2001       |
| Out of Cal Date         | 3/31/2003       | 3/31/2003       |
| Serial Number           | 8920            | 8920            |
| Source emission rate    | 254925 dpm      | 254925 dpm      |
| Instrument Channel      | Channel 1       | Out             |
| instrument efficiency   | 0.20%           | 0.40%           |
| 2 Sigma Range           | 778-887         | 6004-6383       |
| 3 Sigma Range           | 751-914         | 5910-6477       |

PARSONS MAIN, INC.

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#### PARSONS MAIN, INC.

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| CLIENT_<br>JUBJECT_ Wittal Fonction Check<br>Locataon: Sommy, decu, ~ 60                                        | • F               | JOB NO<br>BYВУСКД<br>СКД                                                                                                                   | DATE 440    |
|-----------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| SIN: A954P<br>Source Type: An 241<br>SIN: 8920                                                                  | H (               | HU                                                                                                                                         | OL          |
| SIG - Scallegeord - Score $I = 8042 8213 7764 8745 8416 8557 8228 8259 79410 86611 84412 85113 85214 84415 815$ | 12345670090112345 | 007<br>6065<br>6256<br>6187<br>6120<br>6285<br>6308<br>6215<br>6308<br>6215<br>649<br>6193<br>6042<br>6042<br>6042<br>6049<br>6140<br>6212 | 1000<br>Лец |

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FIDLER Serial Number A954P/A402Q

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| DATE: 61510)                        |           | PAGE Z4 0    | F 13                  |  |  |
|-------------------------------------|-----------|--------------|-----------------------|--|--|
| Source                              | Am-241    |              |                       |  |  |
| Calibration Date                    | 4/10/2001 |              |                       |  |  |
| Out of Cal Date                     |           | 3/31/2003    |                       |  |  |
| Serial Number                       |           | 8920         |                       |  |  |
| Source emission rate                |           | 254925 b/min |                       |  |  |
| Instrument Channel                  | CHANNEL 1 | 001          |                       |  |  |
| High Voltage                        | 1.04      |              |                       |  |  |
| Battery Check                       | uK.       | à            |                       |  |  |
| Source Check Reading (1)            | Fund      | ¥1.          | July 1                |  |  |
| Source Check Reading (2)            | . For VS  |              | Y                     |  |  |
| Source Check Reading (3)            | In the    | /            |                       |  |  |
| Source Check Reading (4)            |           |              |                       |  |  |
| Source Check Reading (5)            |           | /            |                       |  |  |
| Source Check Reading (AVERAGE)      | 1.        | /            | And the second second |  |  |
| 1                                   |           |              |                       |  |  |
| Direct Background reading (1)       |           | in           |                       |  |  |
| Direct Background reading (2)       | had fine  |              |                       |  |  |
| Direct Background reading (3)       | Initiaks  | 1.           |                       |  |  |
| Direct Background reading (4)       | Unic      | in the       |                       |  |  |
| Direct Background reading (5)       |           |              |                       |  |  |
| Direct Background reading (AVERAGE) | 1.        | /            |                       |  |  |
|                                     | ATA       |              | 111                   |  |  |
| Efficiency = (CPM-Background) / DPM | 1001      | 144          | MA                    |  |  |
| MID-DAY SOURCE READING              | Not used  | in AM        |                       |  |  |
| MID-DAY BACKGROUND READING          | 0         |              |                       |  |  |
| EVENING SOURCE READING              | 526       | 5668         | X                     |  |  |
| EVENING BACKGROUND READING          | Z99       | 5115         | 4                     |  |  |
| Morning check performed by          | VRH/AML   | VRL/AML      |                       |  |  |
| Mid-day check performed by          | NOA       | NA           | /                     |  |  |
| Evening check performed by          | DR6       | OR6          | V                     |  |  |

FIDLER Serial Number A954P/A402Q

| DATE: 4/4/01 0930                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE 5 OF            | = (3         | 1     |  |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|-------|--|
| Source                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Am-241               |              |       |  |
| Calibration Date                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4/10/2001            |              |       |  |
| Out of Cal Date                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3/31/2003            |              |       |  |
| Serial Number                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8920<br>254025 b/min |              | -     |  |
| Instrument Channel                  | CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OUT                  | 1            | 1     |  |
| High Voltage                        | 1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1.1                  | $\backslash$ | 1     |  |
| Battery Check                       | GK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OIC                  |              | W.    |  |
| Source Check Reading (1)            | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1/                   | 1 \ .        | 7 4   |  |
| Source Check Reading (2)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | aut                  | 11/11/10/    | 10 20 |  |
| Source Check Reading (3)            | $\rightarrow$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                      | 1220         | 2 X   |  |
| Source Check Reading (4)            | //                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |              | 13.0  |  |
| Source Check Reading (5)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |              | 4.4   |  |
| Source Check Reading (AVERAGE)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |              | 120   |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |              |       |  |
| Direct Background reading (1)       | 282                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5048                 | $\backslash$ |       |  |
| Direct Background reading (2)       | 348                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5110                 | 1 4 ,        |       |  |
| Direct Background reading (3)       | 305                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5113                 | 10,10        |       |  |
| Direct Background reading (4)       | 323                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5163                 | 101          |       |  |
| Direct Background reading (5)       | 294                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5168                 |              |       |  |
| Direct Background reading (AVERAGE) | 310                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3120                 |              |       |  |
| Efficiency = (CPM-Background) / DPM |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |              | 200   |  |
| MID-DAY SOURCE READING              | not used in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | mericiny             | /            | 0     |  |
| MID-DAY BACKGROUND READING          | not used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ( MUDARLINY          |              | ]     |  |
| EVENING SOURCE READING              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |              |       |  |
| EVENING BACKGROUND READING          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | /                    | ¥/           |       |  |
| Morning check performed by          | where the second |                      |              |       |  |
| Mid-day check performed by          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      | /            |       |  |
| Evening check performed by          | K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      | X            |       |  |

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# FIDLER Serial Number A954P/A402Q

| Source                              |             | Am-241               |     |
|-------------------------------------|-------------|----------------------|-----|
| Calibration Date                    |             | 4/10/2001            |     |
| Out of Cal Date                     |             | 3/31/2003            |     |
| Serial Number                       |             | 8920<br>254925 h/min |     |
| Instrument Channel                  | CHANNEL 1   | OUT                  |     |
| High Voltage                        | ok.         | OK                   |     |
| Battery Check                       | OK          | OK                   |     |
| Source Check Reading (1)            | 801         | 6197                 |     |
| Source Check Reading (2)            | 801         | 6175                 | KLH |
| Source Check Reading (3)            | 799         | 6275                 |     |
| Source Check Reading (4)            | 821         | 6260                 |     |
| Source Check Reading (5)            | 836         | 6276                 |     |
| Source Check Reading (AVERAGE)      | 811.6       | 6236                 |     |
|                                     |             |                      |     |
| Direct Background reading (1)       | 300         | 52.47                |     |
| Direct Background reading (2)       | 301         | 5019                 |     |
| Direct Background reading (3)       | 287         | 5134                 |     |
| Direct Background reading (4)       | 274         | 5085                 | KIK |
| Direct Background reading (5)       | 306         | 5186                 |     |
| Direct Background reading (AVERAGE) | 293.6       | 5134.2               |     |
| Efficiency = (CPM-Background) / DPM |             | 0.43%                |     |
| MID-DAY SOURCE READING              | not used in | Morning              |     |
| MID-DAY BACKGROUND READING          | not aged in | morning              | 1   |
| EVENING SOURCE READING              | 753 2 TEM   | 6026                 |     |
| EVENING BACKGROUND READING          | . 300       | 5216                 |     |
| Morning check performed by          | KUK         |                      |     |
| Mid-day check performed by          | inta        |                      |     |
| E                                   | 1 PMA       |                      |     |

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# FIDLER Serial Number A954P/A402Q

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| DATE: 6/8/01                                                                                                                                                                                             | PAGE 7 OF 13 |                                              |       |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------|-------|--|
| Source                                                                                                                                                                                                   |              | Am-241                                       |       |  |
| Calibration Date                                                                                                                                                                                         | 4/10/2001    |                                              |       |  |
| Out of Cal Date                                                                                                                                                                                          | 3/31/2003    |                                              |       |  |
| Serial Number                                                                                                                                                                                            |              | 8920<br>254925 b/min                         |       |  |
| Instrument Channel                                                                                                                                                                                       | CHANNEL 1    | OUT                                          | 1     |  |
| High Voltage                                                                                                                                                                                             | 1.1          | 1.1                                          |       |  |
| Battery Check                                                                                                                                                                                            | OK           | oK                                           | /     |  |
| Source Check Reading (1)                                                                                                                                                                                 |              | 6346                                         | Y     |  |
| Source Check Reading (2)                                                                                                                                                                                 |              | 6450                                         | Y.    |  |
| Source Check Reading (3)                                                                                                                                                                                 | A A          | 6474                                         |       |  |
| Source Check Reading (4)                                                                                                                                                                                 | 2            | 6298                                         |       |  |
| Source Check Reading (5)                                                                                                                                                                                 |              | 6274                                         |       |  |
| Source Check Reading (AVERAGE)                                                                                                                                                                           |              | 6368                                         | /     |  |
| Direct Background reading (1)<br>Direct Background reading (2)<br>Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE) |              | 5129<br>5216<br>5349<br>5248<br>5322<br>5322 | -5253 |  |
| Efficiency = (CPM-Background) / DPM                                                                                                                                                                      |              | 0.44 %                                       | MA    |  |
| MID-DAY SOURCE READING                                                                                                                                                                                   |              | 6366                                         | -     |  |
| MID-DAY BACKGROUND READING                                                                                                                                                                               |              | 5209                                         |       |  |
| EVENING SOURCE READING                                                                                                                                                                                   |              | 5979                                         | Jt/   |  |
| EVENING BACKGROUND READING                                                                                                                                                                               |              | 5139                                         | 4     |  |
| Morning check performed by                                                                                                                                                                               | EKM          | EKM                                          |       |  |
| Mid-day check performed by                                                                                                                                                                               | EKM          | EKM                                          |       |  |
| Evening check performed by                                                                                                                                                                               | URH          | Jeff                                         | V     |  |

# FIDLER Serial Number A954P/A402Q

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| DATE: 6-7-01                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE 8 OF                      | 13  |  |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----|--|
| Source                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Am-241                         |     |  |
| Calibration Date                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4/10/2001<br>3/31/2003<br>8920 |     |  |
| Out of Cal Date                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                |     |  |
| Source emission rate                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 254925 b/min                   |     |  |
| Instrument Channel                                          | CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OUT                            |     |  |
| High Voltage                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1.1                            |     |  |
| Battery Check                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | OK                             | /   |  |
| Source Check Reading (1)                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5933                           | /   |  |
| Source Check Reading (2)                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6186                           | 3   |  |
| Source Check Reading (3)                                    | - The second sec | 5956                           | 1   |  |
| Source Check Reading (4)                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6077                           |     |  |
| Source Check Reading (5)                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6102                           | /   |  |
| Source Check Reading (AVERAGE)                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 605                            | 1/  |  |
| Direct Background reading (1) Direct Background reading (2) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5055                           |     |  |
| Direct Background reading (2)                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2055                           |     |  |
| Direct Background reading (3)                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2100                           | .5/ |  |
| Direct Background reading (4)                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5112                           |     |  |
| Direct Background reading (5)                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5094                           | /   |  |
| Direct Background reading (AVERAGE)                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5157                           | /   |  |
| Efficiency = (CPM-Background) / DPM                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.35 %.                        |     |  |
| MID-DAY SOURCE READING                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | /                              | 1   |  |
| MID-DAY BACKGROUND READING                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | W                              | X   |  |
| EVENING SOURCE READING                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | /                              | /   |  |
| EVENING BACKGROUND READING                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -                              | /   |  |
| Morning check performed by                                  | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | EKM                            | NA  |  |
| Mid-day check performed by                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Not used                       | An  |  |
| Evening check performed by                                  | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | " Not used                     | PM  |  |

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# FIDLER Serial Number A954P/A402Q

| DATE: 6/11 (01                      |                                            | PAGE 4 OF    | 13                |
|-------------------------------------|--------------------------------------------|--------------|-------------------|
| Source                              | 13 4 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 | Am-241       |                   |
| Calibration Date                    | 4/10/2001                                  |              |                   |
| Out of Cal Date                     |                                            | 3/31/2003    |                   |
| Source emission rate                |                                            | 254925 b/min |                   |
| Instrument Channel                  | CHANNEL 1                                  | OUT          |                   |
| High Voltage                        | 1.04                                       | 1.04         |                   |
| Battery Check                       | ok                                         | ok           |                   |
| Source Check Reading (1)            | 888                                        | 6577         | V                 |
| Source Check Reading (2)            | 629                                        | 6379         | A                 |
| Source Check Reading (3)            | 897                                        | 6456         |                   |
| Source Check Reading (4)            | 868                                        | 6346         |                   |
| Source Check Reading (5)            | 870                                        | 6335         | /                 |
| Source Check Reading (AVERAGE)      | 870 ok                                     | 6419 ~       | -> Alittle high , |
|                                     |                                            |              |                   |
| Direct Background reading (1)       | 372                                        | 5459         |                   |
| Direct Background reading (2)       | 382                                        | 5224         |                   |
| Direct Background reading (3)       | 389                                        | 5275         | X                 |
| Direct Background reading (4)       | 371                                        | 5259         | Ž                 |
| Direct Background reading (5)       | 376                                        | 5244         |                   |
| Direct Background reading (AVERAGE) | 378                                        | 52 93        | /                 |
| Efficiency = (CPM-Background) / DPM | 0.19%.                                     | 0.44 %       | NK                |
| MID-DAY SOURCE READING              | 804                                        | 5173 5625EM  |                   |
| MID-DAY BACKGROUND READING          | 337                                        | 4909         | /                 |
| EVENING SOURCE READING              | 758                                        | 5755         | N/                |
| EVENING BACKGROUND READING          | 334                                        | 4754         | R.                |
| Morning check performed by          | JUN                                        | JRIL         |                   |
| Mid-day check performed by          | EKM                                        | EKM          |                   |
| Evening check performed by          | EKM                                        | EKM          |                   |

background is high today

PARSONS ENGINEERING SCIENCE

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# FIDLER Serial Number A954P/A402Q

| DATE: 41201                                                    |           | PAGE OF      | 13           |
|----------------------------------------------------------------|-----------|--------------|--------------|
| Source                                                         |           | Am-241       |              |
| Calibration Date                                               |           |              |              |
| Out of Cal Date                                                |           | 3/31/2003    |              |
| Serial Number                                                  |           | 254925 b/min |              |
| Instrument Channel                                             | CHANNEL 1 | OUT          | Λ            |
| High Voltage                                                   |           | 1.1          | $\backslash$ |
| Battery Check                                                  |           | OK           |              |
| Source Check Reading (1)                                       |           | 5693         |              |
| Source Check Reading (2)                                       |           | 5820         |              |
| Source Check Reading (3)                                       |           | 5772         |              |
| Source Check Reading (4)                                       |           | 5724         |              |
| Source Check Reading (5)                                       |           | 5775         |              |
| Source Check Reading (AVERAGE)                                 |           | 5757         |              |
| Direct Background reading (1)<br>Direct Background reading (2) |           | 5019         |              |
| Direct Background reading (2)                                  |           | 5017         |              |
| Direct Background reading (3)                                  |           | 7059         |              |
| Direct Background reading (4)                                  |           | 5042         | V            |
| Direct Background reading (5)                                  |           | 4773         | V V          |
| Direct Background reading (AVERAGE)                            |           | 4963         | Λ            |
| Efficiency = (CPM-Background) / DPM                            |           | 0.31 %.      |              |
| MID-DAY SOURCE READING                                         |           | 2/           |              |
| MID-DAY BACKGROUND READING                                     |           | y pro-       |              |
| EVENING SOURCE READING                                         |           | 10.10        |              |
| EVENING BACKGROUND READING                                     |           | 2            |              |
| Morning check performed by                                     |           | Ein/         |              |
| Mid-day check performed by                                     | _         | /            | /            |
| Evening check performed by                                     |           | /            |              |

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| CLIENT                                                                                                                                                                                                  | heck-Midday # 1400                | JOB NO SHEET OF I3<br>D BY EKM DATE DATE O/13/01<br>CKD REVISION |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------|
| Instrument:<br>S/N:                                                                                                                                                                                     | A954 P Fidler<br>A954P - Out      | Time: 1400                                                       |
| <br>Background<br>4919<br>4779<br>4779<br>4779<br>4779<br>4849<br>4 4825<br>5 4961<br>6 4851<br>7 4783<br>8 4914<br>9 4779<br>10 4854<br>11 4866<br>12 4879<br>13 4736<br>14 4826<br>15 4766<br>Arg = - |                                   | Mnggy, humid, 80°F                                               |
| Source<br>1 5634<br>2 5589<br>3 5553<br>4 5784<br>5 5593<br>6 5653<br>7 5540<br>8 5586<br>9 5648<br>10 5640<br>11 5641<br>12 5578<br>13 5637<br>14 5739                                                 | Type: Am-241 5/N.<br>Avg =<br>0 = | :8920                                                            |

# FIDLER Serial Number A954P/A402Q

| DATE: 10/13/01                      |              | PAGE 12 OF   | = 13   |  |  |
|-------------------------------------|--------------|--------------|--------|--|--|
| Source                              |              | Am-241       |        |  |  |
| Calibration Date                    |              | 4/10/2001    |        |  |  |
| Out of Cal Date                     |              | 3/31/2003    |        |  |  |
| Serial Number                       |              | 8920         |        |  |  |
| Source emission rate                | CHANNEL 4    | 254925 b/min | 1      |  |  |
|                                     | CHANNEL 1    |              |        |  |  |
| High Voltage                        |              | 1.04         | /      |  |  |
| Battery Check                       | tet y        | Ok           | /      |  |  |
| Source Check Reading (1)            | $ \sqrt{7} $ | 5956         |        |  |  |
| Source Check Reading (2)            | X            | 5951         | 3M     |  |  |
| Source Check Reading (3)            |              | 5904         | .4     |  |  |
| Source Check Reading (4)            |              | 5780         |        |  |  |
| Source Check Reading (5)            |              | 5998         |        |  |  |
| Source Check Reading (AVERAGE)      |              | 5918         |        |  |  |
|                                     |              |              |        |  |  |
| Direct Background reading (1)       |              | 5059         |        |  |  |
| Direct Background reading (2)       | N.           | 4927         |        |  |  |
| Direct Background reading (3)       |              | 4992         | NY NY  |  |  |
| Direct Background reading (4)       |              | 4966         | Y      |  |  |
| Direct Background reading (5)       |              | 5032         |        |  |  |
| Direct Background reading (AVERAGE) |              | 4995         | V      |  |  |
| Efficiency = (CPM-Background) / DPM | JUNE -       | 0.36%        | NA     |  |  |
|                                     |              |              |        |  |  |
| MID-DAY SOURCE READING              |              |              |        |  |  |
| MID-DAY BACKGROUND READING          |              | - w          |        |  |  |
| EVENING SOURCE READING              | 14           | Y            |        |  |  |
| EVENING BACKGROUND READING          | Ă I          |              |        |  |  |
| Morning check performed by          |              | JRH 0720     | July . |  |  |
| Mid-day check performed by          |              | EKM 1330     | en y   |  |  |
| Evening check performed by          |              |              | /      |  |  |

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# FIDLER Serial Number A954P/A402Q

| DATE: 18 JUNE 2001                  |           | PAGE 13 OF 13 |          |      |  |
|-------------------------------------|-----------|---------------|----------|------|--|
| Source                              |           | Am-241        |          |      |  |
| Calibration Date                    |           | 4/10/2001     |          |      |  |
| Out of Cal Date                     |           | 3/31/2003     |          |      |  |
| Serial Number                       |           |               |          |      |  |
| Instrument Channel                  | CHANNEL 1 | OUT           | OUT K    |      |  |
| High Voltage                        | 1.0 KV    | ILV           | OK       |      |  |
| Battery Check                       | σK        | OK            | OK       |      |  |
| Source Check Reading (1)            | /         | 4857 MK       | 34916    |      |  |
| Source Check Reading (2)            |           | 4765 Juk      | 4814     |      |  |
| Source Check Reading (3)            | . A       | 4762 Mic      | 4655     |      |  |
| Source Check Reading (4)            | 7         | 47301ml       | 4810     |      |  |
| Source Check Reading (5)            | /         | 4083 frk      | 48 45    |      |  |
| Source Check Reading (AVERAGE)      | V         | 4759.4 J~K    | 4808 KUK |      |  |
|                                     |           |               |          |      |  |
| Direct Background reading (1)       |           |               |          | ł    |  |
| Direct Background reading (2)       |           |               |          |      |  |
| Direct Background reading (3)       |           | 1             | -        |      |  |
| Direct Background reading (4)       | -         | Pla           |          |      |  |
| Direct Background reading (5)       |           |               |          |      |  |
| Direct Background reading (AVERAGE) |           |               |          |      |  |
| Efficiency = (CPM-Background) / DPM | NA        | M             | NA       |      |  |
| MID-DAY SOURCE READING              |           |               | n 4600 - | Low  |  |
| MID-DAY BACKGROUND READING          |           |               | ~ 4200 - | real |  |
| EVENING SOURCE READING              |           | 1             | NA       |      |  |
| EVENING BACKGROUND READING          | 2ª        | N.            | NA       |      |  |
| Morning check performed by          |           |               | NA       |      |  |
| Mid-day check performed by          |           | /             | JEH 1430 |      |  |
| Evening check performed by          |           | /             | NA       |      |  |

K CHANGEP BATTERES G-15-2001 104541

\*\* NOT WITHIN 20
| Site: Seneca Army Depot |                                         |                 |
|-------------------------|-----------------------------------------|-----------------|
| Project: SEAD-12        |                                         |                 |
| Team:                   | 100000000000000000000000000000000000000 |                 |
|                         | Page 1 of 13                            |                 |
| InstrumentType          | Bicron Fidler                           | Bicron Fidler   |
| AKA                     | Fidler                                  | Fidler          |
| Make                    | Bicron                                  | Bicron          |
| Model                   | Analyst                                 | Analyst         |
| Serial Number           | A968P                                   | A968P           |
| Calibration Date        | 1/25/2001                               | 1/25/2001       |
| Out of Cal Date         | 7/24/2001                               | 7/24/2001       |
| Probe:                  | Nal Scintilator                         | Nal Scintilator |
| Make                    | Bicron                                  | Bicron          |
| Model                   | G-5                                     | G-5             |
| Serial Number           | A367Q                                   | A367Q           |
| Calibration Date        | 1/25/2001                               | 1/25/2001       |
| Out of Cal Date         | 7/24/2001                               | 7/24/2001       |
| Source                  | Am-241                                  | Am-241          |
| Source type             | Low E gamma                             | Low E gamma     |
| Calibration Date        | 4/10/2001                               | 4/10/2001       |
| Out of Cal Date         | 3/31/2003                               | 3/31/2003       |
| Serial Number           | 8920                                    | 6/2/1924        |
| Source emission rate    | 254925 dpm                              | 254925 dpm      |
| Instrument Channel      | Channel 1                               | Out             |
| instrument efficiency   | 0.30%                                   | 0.30%           |
| 2 Sigma Range           | 2700-3152                               | 5198-5608       |
| 3 Sigma Range           | 2587-3265                               | 5095-5711       |

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A968P - OUT



| (   |                                                              | ITIAL FUNCTION                                                                                                                | CHEUC                                                                                                                                                   |                                                                                                    | JOB NO                                                                                                                     |              | SHEET 2 OF 13        |
|-----|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|
| ,   | 30BJE01                                                      |                                                                                                                               |                                                                                                                                                         |                                                                                                    |                                                                                                                            |              |                      |
| Ľ   | (N)                                                          | STRUMENT: FIT<br>S(N: A968)                                                                                                   | PLER<br>A367Q                                                                                                                                           |                                                                                                    | 12:<br>BATTERY                                                                                                             | ispn<br>: Ok |                      |
| (.  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$         | CKGROUND<br>OUT<br>5226<br>826<br>826<br>838 Floor<br>040<br>211<br>856<br>5105/<br>258<br>123<br>59<br>05<br>909<br>81<br>61 | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15                                                                           | 04:'45<br>54<br>54<br>54<br>53<br>53<br>53<br>54<br>52<br>53<br>53<br>54<br>54<br>54<br>547<br>547 | 5002CE<br>6/5/01<br>164<br>75<br>26<br>18<br>16<br>19<br>26<br>18<br>16<br>19<br>26<br>18<br>10<br>12<br>41<br>9<br>5<br>2 | Am-24        | H TYPE:<br>SIN: 8920 |
|     | Avg                                                          | = 5281.13<br>= 72 67                                                                                                          |                                                                                                                                                         | Aug =<br>0 =                                                                                       | 5403                                                                                                                       |              |                      |
|     | Jug Buc<br>6/5/01                                            | Kgroond 10:20                                                                                                                 |                                                                                                                                                         | -                                                                                                  |                                                                                                                            |              |                      |
| SC. | 1 480<br>2 468<br>3 462<br>4 459<br>5 463<br>6 456<br>7 4707 | 2<br>2<br>2<br>3<br>9<br>9                                                                                                    | $ \begin{array}{rcrcr} 8 & 4634 \\ 9 & 4582 \\ 10 & 4650 \\ 11 & 4721 \\ 12 & 4813 \\ 13 & 4565 \\ 14 & 4753 \\ 15 & 4753 \\ 15 & 4737 \\ \end{array} $ |                                                                                                    | Ara=                                                                                                                       | 467<br>68    |                      |

#### SENECA ARMY DEPOT SEAD-12 RI/FS 6-20-01front

| Site: Seneca Army Depot |                    |                  |
|-------------------------|--------------------|------------------|
| Project: SEAD-12        |                    |                  |
| Team:                   | Contraction of the | and the state of |
|                         | Page 3 of 13       |                  |
| Instrument Type         | Bicron Fidler      | Bicron Fidler    |
| AKA                     | Fidler             | Fidler           |
| Make                    | Bicron             | Bicron           |
| Model                   | Analyst            | Analyst          |
| Serial Number           | A968P              | A968P            |
| Calibration Date        | 1/25/2001          | 1/25/2001        |
| Out of Cal Date         | 7/24/2001          | 7/24/2001        |
| Probe                   | Nal Scintilator    | Nal Scintilator  |
| Make                    | Bicron             | Bicron           |
| Model                   | G-5                | G-5              |
| Serial Number           | A367Q              | A367Q            |
| Calibration Date        | 1/25/2001          | 1/25/2001        |
| Out of Cal Date         | 7/24/2001          | 7/24/2001        |
| Source                  | Am-241             | Am-241           |
| Source type             | Low E gamma        | Low E gamma      |
| Calibration Date        | 4/10/2001          | 4/10/2001        |
| Out of Cal Date         | 3/31/2003          | 3/31/2003        |
| Serial Number           | 8920               | 6/2/1924         |
| Source emission rate    | 254925 dpm         | 254925 dpm       |
| Instrument Channel      | Channel 1          | Out              |
| instrument efficiency   | 0.30%              | 0.30%            |
| 2 Sigma Range           |                    | 5799-6079        |
| 3 Sigma Range           |                    | 5730-6149        |

PARSONS MAIN, INC.

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| CLIENT          | EUNICTION                                                                                                    | CIETI                        | JOB NO     |                       |
|-----------------|--------------------------------------------------------------------------------------------------------------|------------------------------|------------|-----------------------|
| SUBJECT         | PONCION                                                                                                      |                              | BY         | TIME<br>REVISION 1237 |
|                 | FIDLET                                                                                                       | 2 A968 P                     |            |                       |
| Am-             | 241 5000                                                                                                     | 2CE S(N: 8920                | Warm, huma | 1,~80'F               |
| 123456789011234 | 6025<br>5885<br>5988<br>6006<br>5954<br>5954<br>5925<br>5974<br>5806<br>5925<br>5872<br>6042<br>5960<br>5927 | 1242<br>1259<br>1302<br>1306 |            |                       |
| 15              | ०४४९                                                                                                         |                              |            |                       |

5939 Averge 6 = 77.4

FIDLER Serial Number A968P/A367Q

| DATE: 6/19/01                       |           | PAGE 5 0   | F 13                       | ]                |  |  |
|-------------------------------------|-----------|------------|----------------------------|------------------|--|--|
| Source                              |           | Am-241     |                            |                  |  |  |
| Calibration Date                    |           | 1/25/2001  |                            | 1                |  |  |
| Out of Cal Date                     | 19 10     | //24/2001  |                            | 4                |  |  |
| Serial Number                       |           | 254925 dpm |                            | 4                |  |  |
| Instrument Channel                  | CHANNEL 1 | OUT        | 1                          | 1                |  |  |
| High Voltage                        | /         | ~1.28 ok   | /                          | 1                |  |  |
| Battery Check                       |           | OK         | /                          | 1                |  |  |
| Source Check Reading (1)            |           | 5450       |                            |                  |  |  |
| Source Check Reading (2)            | 37        | 5373       | ¥                          |                  |  |  |
| Source Check Reading (3)            |           | 5459       | Y                          |                  |  |  |
| Source Check Reading (4)            |           | 5437       |                            |                  |  |  |
| Source Check Reading (5)            |           | 5551       |                            |                  |  |  |
| Source Check Reading (AVERAGE)      |           | 5454       |                            |                  |  |  |
|                                     |           |            |                            |                  |  |  |
| Direct Background reading (1)       |           | 4713       | /                          | 1                |  |  |
| Direct Background reading (2)       |           | 4712       |                            |                  |  |  |
| Direct Background reading (3)       | N/        | 4056       | Je Je                      |                  |  |  |
| Direct Background reading (4)       | 4         | 4735       |                            |                  |  |  |
| Direct Background reading (5)       |           | 4888       |                            |                  |  |  |
| Direct Background reading (AVERAGE) |           | 4741       | /                          |                  |  |  |
| Efficiency = (CPM-Background) / DPM | NA        | 2.7%       | NA                         |                  |  |  |
| MID-DAY SOURCE READING              | 1         | 5340 -> 0  | k w/source upside-d        | wn               |  |  |
| MID-DAY BACKGROUND READING          |           | 4768       | -will cheek<br>correct sco | with neiny at en |  |  |
| EVENING SOURCE READING              | .W        | 5911       | - checked agains           | of day           |  |  |
| EVENING BACKGROUND READING          | 4         | 4615       | correct game               | nd               |  |  |
| Morning check performed by          |           | JeH 0720   | in                         |                  |  |  |
| Mid-day check performed by          |           | JRH 1230   | Ju -                       |                  |  |  |
| Evening check performed by          |           | Jell 1650  | /                          |                  |  |  |

PARSONS ENGINEERING SCIENCE

check -> source upside down initial Fundric- checks were performed w/ source upside SCIENCE down and howe not been re-dore - will redo at lunch

## FIDLER Serial Number A968P/A367Q

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| DATE: OGLOLOON                      |           | PAGE 6 0   | F (B     |  |  |  |
|-------------------------------------|-----------|------------|----------|--|--|--|
| Source                              |           | Am-241     |          |  |  |  |
| Calibration Date                    |           | 1/25/2001  |          |  |  |  |
| Out of Cal Date                     | 7/24/2001 |            |          |  |  |  |
| Serial Number                       |           | A968P      |          |  |  |  |
| Source emission rate                | CHANNEL 1 | 254925 apm | 1        |  |  |  |
| High Voltage                        | CHANNELT  | 1.281      | 1        |  |  |  |
| Battery Check                       |           | OK         |          |  |  |  |
| Source Check Reading (1)            |           | 5778       |          |  |  |  |
| Source Check Reading (2)            | 2         | 6046       | 12/      |  |  |  |
| Source Check Reading (3)            |           | 5782       |          |  |  |  |
| Source Check Reading (4)            |           | 5908       |          |  |  |  |
| Source Check Reading (5)            |           | 6048       | /        |  |  |  |
| Source Check Reading (AVERAGE)      |           | 5912.4     |          |  |  |  |
|                                     |           |            |          |  |  |  |
| Direct Background reading (1)       | /         | 4674       | /        |  |  |  |
| Direct Background reading (2)       | //_       | 4684       | N        |  |  |  |
| Direct Background reading (3)       | W         | 4496       | .09/     |  |  |  |
| Direct Background reading (4)       | 4         | 4628       |          |  |  |  |
| Direct Background reading (5)       |           | 4597       | /        |  |  |  |
| Direct Background reading (AVERAGE) |           | 1615,8     |          |  |  |  |
| Efficiency = (CPM-Background) / DPM | NA        | 0.5%       | NA       |  |  |  |
| MID-DAY SOURCE READING              | 1         | 5920       | /        |  |  |  |
| MID-DAY BACKGROUND READING          |           | 4758       |          |  |  |  |
| EVENING SOURCE READING              | ¥/        | 5916       | 1 August |  |  |  |
| EVENING BACKGROUND READING          | Y I       | 4661       | Y        |  |  |  |
| Morning check performed by          |           | JR4 0710   |          |  |  |  |
| Mid-day check performed by          |           | JRU 1200   |          |  |  |  |
| Evening check performed by          |           | JR4 1730   | 1        |  |  |  |

## FIDLER Serial Number A968P/A367Q

| DATE: 6/21/01                       |            | PAGE 7 OI  | F 13 |  |  |
|-------------------------------------|------------|------------|------|--|--|
| Source                              | Am-241     |            |      |  |  |
| Calibration Date                    | 1/25/2001  |            |      |  |  |
| Out of Cal Date                     | 7/24/2001  |            |      |  |  |
| Serial Number                       |            | 25/025 dom |      |  |  |
| Instrument Channel                  | CHANNEL 1  | OUT        | 1    |  |  |
| High Voltage                        | 1          | 1.28       |      |  |  |
| Battery Check                       |            | ok         |      |  |  |
| Source Check Reading (1)            |            | 6025       | ×/   |  |  |
| Source Check Reading (2)            | 3º/        | 6161       | 3/   |  |  |
| Source Check Reading (3)            |            | 6067       | 1    |  |  |
| Source Check Reading (4)            |            | 5944       |      |  |  |
| Source Check Reading (5)            |            | 6081       |      |  |  |
| Source Check Reading (AVERAGE)      |            | 6056       | /    |  |  |
|                                     |            |            |      |  |  |
| Direct Background reading (1)       |            | 4735       |      |  |  |
| Direct Background reading (2)       | . /        | 4675       | /    |  |  |
| Direct Background reading (3)       | N/         | 4675       | N/   |  |  |
| Direct Background reading (4)       | The second | 4703       |      |  |  |
| Direct Background reading (5)       |            | 4634       |      |  |  |
| Direct Background reading (AVERAGE) |            | 4684       | /    |  |  |
| Efficiency = (CPM-Background) / DPM | NA         | 0.5%       | NA   |  |  |
| MID-DAY SOURCE READING              |            | 6108       | /    |  |  |
| MID-DAY BACKGROUND READING          |            | 4745       |      |  |  |
| EVENING SOURCE READING              | V          | 6059       | , W  |  |  |
| EVENING BACKGROUND READING          | ¥/         | 4660       | 1    |  |  |
| Morning check performed by          |            | Ney 0750   |      |  |  |
| Mid-day check performed by          |            | KKS 1236   |      |  |  |
| Evening check performed by          |            | JR4 1740   |      |  |  |

# FIDLER Serial Number A968P/A367Q

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| DATE: 6/22/01                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PAGE & O   | F 13        |  |  |  |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|--|--|--|
| Source                              | anne an Alter an Braden an Alter an A<br>Alter an Alter an A | Am-241     |             |  |  |  |
| Calibration Date                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1/25/2001  |             |  |  |  |
| Out of Cal Date                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 7/24/2001  |             |  |  |  |
| Source emission rate                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 254925 dpm |             |  |  |  |
| Instrument Channel                  | CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | OUT        | T           |  |  |  |
| High Voltage                        | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | (.24       |             |  |  |  |
| Battery Check                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ok         |             |  |  |  |
| Source Check Reading (1)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6063       | W           |  |  |  |
| Source Check Reading (2)            | ×/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5875       | Y Y         |  |  |  |
| Source Check Reading (3)            | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5907       | ///         |  |  |  |
| Source Check Reading (4)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6095       | 1/          |  |  |  |
| Source Check Reading (5)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5936       | /           |  |  |  |
| Source Check Reading (AVERAGE)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5975       | X           |  |  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |             |  |  |  |
| Direct Background reading (1)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4788       | 1           |  |  |  |
| Direct Background reading (2)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4745       |             |  |  |  |
| Direct Background reading (3)       | No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4778       |             |  |  |  |
| Direct Background reading (4)       | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4706       |             |  |  |  |
| Direct Background reading (5)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4731       |             |  |  |  |
| Direct Background reading (AVERAGE) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4750       | V           |  |  |  |
| Efficiency = (CPM-Background) / DPM | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0. 4 80%   | NA          |  |  |  |
| MID-DAY SOURCE READING              | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5927       | X           |  |  |  |
| MID-DAY BACKGROUND READING          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4713       |             |  |  |  |
| EVENING SOURCE READING              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6(31       | check in AM |  |  |  |
| EVENING BACKGROUND READING          | Le la                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4865       | KK          |  |  |  |
| Morning check performed by          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | JRH 0745   |             |  |  |  |
| Mid-day check performed by          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | KKS 1235   | 414         |  |  |  |
| Evening check performed by          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | JRH 1730   |             |  |  |  |

### FIDLER Serial Number A968P/A367Q

| DATE: 6/23/01                         |         | PAGE Q C   | DF 13 |  |  |  |
|---------------------------------------|---------|------------|-------|--|--|--|
| Source                                |         | Am-241     |       |  |  |  |
| Calibration Date                      |         | 1/25/2001  |       |  |  |  |
| Out of Cal Date                       |         | 7/24/2001  |       |  |  |  |
| Serial Number                         |         | A968P      |       |  |  |  |
| Source emission rate                  |         | 254925 dpm |       |  |  |  |
|                                       | CHANNEL | 001        |       |  |  |  |
| High Voltage                          | /       | 1.24       | /     |  |  |  |
| Battery Check                         | /       | sle        |       |  |  |  |
| Source Check Reading (1)              |         | 6479       | X     |  |  |  |
| Source Check Reading (2)              | Jan 199 | 6373       | 2/    |  |  |  |
| Source Check Reading (3)              |         | 6396       |       |  |  |  |
| Source Check Reading (4)              |         | 6479       |       |  |  |  |
| Source Check Reading (5)              |         | 6160       |       |  |  |  |
| Source Check Reading (AVERAGE)        |         | 6369       |       |  |  |  |
|                                       |         |            |       |  |  |  |
| Direct Background reading (1)         |         | 5033       | /     |  |  |  |
| Direct Background reading (2)         |         | 4941       |       |  |  |  |
| Direct Background reading (3)         | W       | 4863       | j)    |  |  |  |
| Direct Background reading (4)         | ¥.      | 4867       | ~     |  |  |  |
| Direct Background reading (5)         |         | 4959       |       |  |  |  |
| Direct Background reading (AVERAGE)   |         | 4933       |       |  |  |  |
| Efficiency = (CDM Realizational) (DDM | 11A     | 0560%      | 114   |  |  |  |
| Efficiency = (CPM-Background) / DPM   | ,VP1    | 0,3010     | MA    |  |  |  |
| MID-DAY SOURCE READING                | /       | 6267       | /     |  |  |  |
| MID-DAY BACKGROUND READING            |         | 4943       |       |  |  |  |
| EVENING SOURCE READING                |         | 5999       | M     |  |  |  |
| EVENING BACKGROUND READING            | UN      | 4636       | J.    |  |  |  |
| Morning check performed by            |         | JRH 0800   |       |  |  |  |
| Mid-day check performed by            |         | JRH 1210   |       |  |  |  |
| Evening check performed by            |         | JRH 1618   |       |  |  |  |

#### FIDLER Serial Number A968P/A367Q

| DATE: 6/24 01                       |           | PAGE ( to OF | =  3  |  |  |  |
|-------------------------------------|-----------|--------------|-------|--|--|--|
| Source                              |           | Am-241       |       |  |  |  |
| Calibration Date                    |           | 1/25/2001    |       |  |  |  |
| Out of Cal Date                     |           | 7/24/2001    |       |  |  |  |
| Serial Number                       |           | A968P        |       |  |  |  |
| Source emission rate                | CUANNEL 4 | 254925 dpm   |       |  |  |  |
|                                     | CHANNEL 1 | 001          |       |  |  |  |
| High Voltage                        |           | 1.28         |       |  |  |  |
| Battery Check                       |           | de           |       |  |  |  |
| Source Check Reading (1)            |           | 6082         | J/    |  |  |  |
| Source Check Reading (2)            | J.        | 5942         | .2/   |  |  |  |
| Source Check Reading (3)            |           | 5918         |       |  |  |  |
| Source Check Reading (4)            |           | 6058         |       |  |  |  |
| Source Check Reading (5)            |           | 5926         |       |  |  |  |
| Source Check Reading (AVERAGE)      | V         | 5485         |       |  |  |  |
|                                     |           |              |       |  |  |  |
| Direct Background reading (1)       | /         | 4728         |       |  |  |  |
| Direct Background reading (2)       |           | 4815         |       |  |  |  |
| Direct Background reading (3)       | JUL .     | 4704         | it    |  |  |  |
| Direct Background reading (4)       |           | 4766         | /     |  |  |  |
| Direct Background reading (5)       |           | 4843         |       |  |  |  |
| Direct Background reading (AVERAGE) |           | 4771         |       |  |  |  |
| Efficiency = (CPM-Background) / DPM | NA        | 0.48%        | NA    |  |  |  |
| MID-DAY SOURCE READING              |           | 6078 .       | 1     |  |  |  |
| MID-DAY BACKGROUND READING          |           | 4692         | 1     |  |  |  |
| EVENING SOURCE READING              | Je .      | 5857         | Jul . |  |  |  |
| EVENING BACKGROUND READING          | 4/        | 4446         |       |  |  |  |
| Morning check performed by          |           | Jel 0720     | ./    |  |  |  |
| Mid-day check performed by          |           | JR4 1210     |       |  |  |  |
| Evening check performed by          | /-        | tik 1530     | V     |  |  |  |

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## FIDLER Serial Number A968P/A367Q

| DATE: 6(25/01                         |           | PAGE    OI | F ]3 |  |  |
|---------------------------------------|-----------|------------|------|--|--|
| Source                                |           | Am-241     |      |  |  |
| Calibration Date                      | 1/25/2001 |            |      |  |  |
| Out of Cal Date                       | 7/24/2001 |            |      |  |  |
| Source emission rate                  | -         | 254925 dpm |      |  |  |
| Instrument Channel                    | CHANNEL 1 | OUT        |      |  |  |
| High Voltage                          |           | 1.28       | /    |  |  |
| Battery Check                         |           | ok         |      |  |  |
| Source Check Reading (1)              |           | 6110       | M    |  |  |
| Source Check Reading (2)              | J.        | 6034       | 3    |  |  |
| Source Check Reading (3)              | /         | 6106       |      |  |  |
| Source Check Reading (4)              | /         | 5935       | /    |  |  |
| Source Check Reading (5)              | /         | 0126       | /    |  |  |
| Source Check Reading (AVERAGE)        |           | 6062       |      |  |  |
|                                       |           |            |      |  |  |
| Direct Background reading (1)         |           | 4725       |      |  |  |
| Direct Background reading (2)         |           | 4642       |      |  |  |
| Direct Background reading (3)         | W         | 4775       | N    |  |  |
| Direct Background reading (4)         | /         | 4624       | /    |  |  |
| Direct Background reading (5)         | /         | 4493       |      |  |  |
| Direct Background reading (AVERAGE)   | /         | 4652       |      |  |  |
| Efficiency = (CPM-Background) / DPM   | NA        | D. 6%      | MA   |  |  |
| MID-DAY SOURCE READING                | 5992 OUT  | IL         | 14   |  |  |
| MID-DAY BACKGROUND READING            | 4566 OUT  |            |      |  |  |
| EVENING SOURCE READING                | Ja        | 5849       |      |  |  |
| EVENING BACKGROUND READING            | V         | 4625       |      |  |  |
| Morning check performed by            | KUK       | /          | Jun  |  |  |
| Mid-day check performed by 75° Sum    | JMKOLIN   | an         |      |  |  |
| Evening check performed by 750 Dunnuy | 124/1745  | /          |      |  |  |

FIDLER Serial Number A968P/A367Q

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| DATE: 62601                           | PAGE 12 OF 13                                                              |            |        |  |  |  |
|---------------------------------------|----------------------------------------------------------------------------|------------|--------|--|--|--|
| Source                                | مانین می از می این این این می وارد این | Am-241     |        |  |  |  |
| Calibration Date                      |                                                                            | 1/25/2001  |        |  |  |  |
| Out of Cal Date                       |                                                                            | 7/24/2001  |        |  |  |  |
|                                       |                                                                            | 254925 dpm |        |  |  |  |
| Instrument Channel                    | CHANNEL 1                                                                  | OUT        | $\sim$ |  |  |  |
| High Voltage                          |                                                                            | 1.28       | $\ge$  |  |  |  |
| Battery Check                         |                                                                            | OK         | $\geq$ |  |  |  |
| Source Check Reading (1)              |                                                                            | 5899       | $\geq$ |  |  |  |
| Source Check Reading (2)              | Kik                                                                        | 6039       | $\geq$ |  |  |  |
| Source Check Reading (3)              |                                                                            | 5997       | $\geq$ |  |  |  |
| Source Check Reading (4)              |                                                                            | 6086       | $\geq$ |  |  |  |
| Source Check Reading (5)              |                                                                            | 5944       |        |  |  |  |
| Source Check Reading (AVERAGE)        |                                                                            | 5993       |        |  |  |  |
|                                       |                                                                            |            |        |  |  |  |
| Direct Background reading (1)         | 4762 OUT                                                                   | $\ge$      | $\geq$ |  |  |  |
| Direct Background reading (2)         | 4593 OUT                                                                   | $\geq$     | $\geq$ |  |  |  |
| Direct Background reading (3)         | 4759 ar                                                                    | $\geq$     | $\geq$ |  |  |  |
| Direct Background reading (4)         | 4758 art                                                                   | $\geq$     | $\geq$ |  |  |  |
| Direct Background reading (5)         | 4657 au                                                                    | $\geq$     | $\geq$ |  |  |  |
| Direct Background reading (AVERAGE)   | 47-05.8 OUT                                                                | $\ge$      |        |  |  |  |
| Efficiency = (CPM-Background) / DPM   | 0.50% aut                                                                  | $\times$   | $\ge$  |  |  |  |
| MID-DAY SOURCE READING                | - EK                                                                       | 5899       | $\geq$ |  |  |  |
| MID-DAY BACKGROUND READING            | 4637                                                                       | > <        | $\geq$ |  |  |  |
| EVENING SOURCE READING                | - une                                                                      | . 5768     | $\geq$ |  |  |  |
| EVENING BACKGROUND READING            | 4455                                                                       | $\geq$     | $\geq$ |  |  |  |
| Morning check performed by SUNNY 65°F | KUK OFID                                                                   | $\geq$     | $\geq$ |  |  |  |
| Mid-day check performed by            | ROM 12:150                                                                 | $\geq$     | $\geq$ |  |  |  |
| Evening check performed by            | Rom 6:50p                                                                  | ><         |        |  |  |  |

Battries Chansed at Midday

#### FIDLER Serial Number A968P/A367Q

| DATE: 6/27/01                       |                     | PAGE 13 OF | 13         |  |
|-------------------------------------|---------------------|------------|------------|--|
| Source                              | Am-241              |            |            |  |
| Calibration Date                    | 1/25/2001           |            |            |  |
| Out of Cal Date                     | 7/24/2001           |            |            |  |
| Serial Number                       |                     | A968P      |            |  |
| Source emission rate                |                     | 254925 dpm |            |  |
| Instrument Channel                  | CHANNEL 1           | OUT        |            |  |
| High Voltage                        |                     | 1.24       | $\geq$     |  |
| Battery Check                       |                     | olc        | $\langle$  |  |
| Source Check Reading (1)            |                     | 6046       | $\langle$  |  |
| Source Check Reading (2)            | - The second second | 5928       |            |  |
| Source Check Reading (3)            |                     | 5990       | $\langle$  |  |
| Source Check Reading (4)            |                     | 6012       | $\langle$  |  |
| Source Check Reading (5)            | /                   | 5885       |            |  |
| Source Check Reading (AVERAGE)      | $\vee$              | 5972       | >          |  |
|                                     |                     |            |            |  |
| Direct Background reading (1)       | 4557                | $\geq$     | $\geq$     |  |
| Direct Background reading (2)       | 4594                | $\geq$     | $\sim$     |  |
| Direct Background reading (3)       | 4634                | $\geq$     | $\geq$     |  |
| Direct Background reading (4)       | 4677                | $\langle$  | $\sim$     |  |
| Direct Background reading (5)       | 47 4759             | $\geq$     | $\geq$     |  |
| Direct Background reading (AVERAGE) | 4644                | $\geq$     |            |  |
| Efficiency = (CPM-Background) / DPM | 0.52%               | $\times$   | $\searrow$ |  |
| MID-DAY SOURCE READING OUTO         | FY                  | NA         | $\ge$      |  |
| MID-DAY BACKGROUND READING Serv     | iceX                | > <        | $\geq$     |  |
| EVENING SOURCE READING              | KUK                 | NA         | $\geq$     |  |
| EVENING BACKGROUND READING          |                     | $\geq$     | $\geq$     |  |
| Morning check performed by          | 2m 5-19 200         | $\geq$     | $\geq$     |  |
| Mid-day check performed by          | NA                  | $\geq$     | $\geq$     |  |
| Evening check performed by          | NA                  | > <        | ><         |  |

taken oct of Service instrument stopped working parsons Engineering Science after drop on 6/26/01 at day's end

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#### SENECA ARMY DEPOT SEAD-12 RI/FS 6-20-01front

| Site: Seneca Army Depot |                 |                 |
|-------------------------|-----------------|-----------------|
| Project: SEAD-12        | 1               |                 |
| Team:                   |                 |                 |
|                         | Page 1 of 23    |                 |
| Instrument Type         | Bicron Fidler   | Bicron Fidler   |
| АКА                     | Fidler          | Fidler          |
| Make                    | Bicron          | Bicron          |
| Model                   | Analyst         | Analyst         |
| Serial Number           | A951P           | A951P           |
| Calibration Date        | 1/25/2001       | 1/25/2001       |
| Out of Cal Date         | 7/24/2001       | 7/24/2001       |
| Probe                   | Nal Scintilator | Nal Scintilator |
| Make                    | Bicron          | Bicron          |
| Model                   | G-5             | G-5             |
| Serial Number           | A365Q           | A365Q           |
| Calibration Date        | 1/25/2001       | 1/25/2001       |
| Out of Cal Date         | 7/24/2001       | 7/24/2001       |
| Source                  | - Am-241        | Am-241          |
| Source type             | Low E gamma     | Low E gamma     |
| Calibration Date        | 4/10/2001       | 4/10/2001       |
| Out of Cal Date         | 3/31/2003       | 3/31/2003       |
| Serial Number           | 8920            | 8920            |
| Source emission rate    | 254925 dpm      | 254925 dpm      |
| Instrument Channel      | Channel 1       | Out             |
| instrument efficiency   | 0.50%           | 0.30%           |
| 2 Sigma Range           |                 | 9233-9505       |
| 3 Sigma Range           |                 | 9165-9572       |

710400 Rom 7127601 PARSONS MAIN, INC.

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| CLIENT               | INSTRUMEN                                                                                            | NT FUNCTION C              | HECKS                | JOB NO<br>BY<br>CKD    | - SHEET 2 OF 23<br>DATE 06 (20 (01<br>TIME<br>REVISION 1230 |
|----------------------|------------------------------------------------------------------------------------------------------|----------------------------|----------------------|------------------------|-------------------------------------------------------------|
| [N<br><u>B</u> A     | STRUMENT<br>KGROUNU                                                                                  | : FIDLER<br>W/JIG:         | A951 P<br>Out window | HV: 1.24               | e V                                                         |
| 123456789101234      | 6363<br>6450<br>6658<br>6459<br>6314<br>6375<br>6394<br>6394<br>6394<br>6504<br>6437<br>6428<br>6324 | 1235<br>1242<br>1242       | AVG 6545             |                        |                                                             |
| 15                   | 6442<br>JOURCE :                                                                                     | ∆=6<br>AM-241<br>s/N: 8920 | 545 2×BKG:1          | 3090                   |                                                             |
| 123456789011         | 4329<br>4359<br>9394<br>9420<br>4460<br>9401<br>9387<br>9287<br>9269<br>9269<br>9269                 | 1249                       | AVG 9369<br>5:97     | -20 = 917<br>+20 = 956 | 5<br>3                                                      |
| 12<br>13<br>14<br>15 | 93 25<br>9311<br>9524<br>9310                                                                        | 1303                       |                      |                        |                                                             |

| DATE: 6-20-01                        | and a star in the second | PAGE 3 OF      | = 23          | 1            |  |
|--------------------------------------|--------------------------|----------------|---------------|--------------|--|
| Source                               | 1                        | Am-241         |               |              |  |
| Calibration Date                     |                          | 4/10/2001      |               |              |  |
| Out of Cal Date                      |                          | 3/31/2003      |               |              |  |
| Serial Number                        |                          | 8920           |               |              |  |
| Source emission rate                 |                          | 254925 b/min . | forth1 710400 | foroit       |  |
| Instrument Channel                   | CHANNEL 1                | OUT            |               |              |  |
| High Voltage                         | A/                       | 1.2            |               |              |  |
| Battery Check                        | $\square$                | ok             |               |              |  |
| Source Check Reading (1)             |                          | 7882           | 4             |              |  |
| Source Check Reading (2)             |                          | 2968 7968      | Rom /         |              |  |
| Source Check Reading (3)             |                          | 8134           |               |              |  |
| Source Check Reading (4)             |                          | 7878           |               |              |  |
| Source Check Reading (5)             |                          | 7944           |               |              |  |
| Source Check Reading (AVERAGE)       |                          | 7961           |               |              |  |
|                                      |                          |                |               | 1            |  |
| Direct Background reading (1)        | X                        | 6449           |               |              |  |
| Direct Background reading (2)        |                          | 6470           |               |              |  |
| Direct Background reading (3)        |                          | 6473           | NY NY         |              |  |
| Direct Background reading (4)        |                          | 6419           | 7             |              |  |
| Direct Background reading (5)        |                          | 6495           |               |              |  |
| Direct Background reading (AVERAGE)  |                          | 6461           |               |              |  |
| Efficiency = (CPM-Background) / DPM  | NA                       | 0,21%          | NA            | Pm<br>712710 |  |
| MID-DAY SOURCE READING (viside down  | Fource                   | 8075           | ok            |              |  |
| MID-DAY BACKGROUND READING           | NA                       | NA             | NA            |              |  |
| EVENING SOURCE READING ( correct for | sra)                     | 9301           | cle           |              |  |
| EVENING BACKGROUND READING           | NA .                     | 6395           |               |              |  |
| Morning check performed by           |                          | RJM0755        | W             |              |  |
| Mid-day check performed by           | Yos                      | MA             | 10            |              |  |
| Evening check performed by           |                          | JRH 1723       | /             |              |  |

Morning check performed with source upside a la fre original funchin check

PARSONS ENGINEERING SCIENCE New function checks were performed @ mideay

# 51 FIDLER Serial Number A948P/A278Q

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| DATE: 6/21/01                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE 4 O      | F 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Source                              | La se an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Am-241        | and the second state of th |  |  |
| Calibration Date                    | 1/0/1900                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Out of Cal Date                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1/0/1900      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Serial Number                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8920 Afr- (h1 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Source emission rate                | 0110110                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 254925 dpm    | 710400 Forot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| Instrument Channel                  | CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OUT           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| High Voltage                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1.2           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Battery Check                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | olc           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Source Check Reading (1)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9598          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Source Check Reading (2)            | N. S.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 9515          | .»                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |
| Source Check Reading (3)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9439          | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| Source Check Reading (4)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9427          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Source Check Reading (5)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9512          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Source Check Reading (AVERAGE)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9492          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Direct Background reading (1)       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 6423          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| Direct Background reading (2)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6435          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Direct Background reading (3)       | - Hu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 6346          | JY/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| Direct Background reading (4)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6419          | Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| Direct Background reading (5)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6479          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Direct Background reading (AVERAGE) | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 6424          | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| Efficiency = (CPM-Background) / DPM | MAX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 9624 (45 1.20 | 0,43%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |
| MID-DAY SOURCE READING              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9624          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| MID-DAY BACKGROUND READING          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6393          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| EVENING SOURCE READING              | W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9403          | NY/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| EVENING BACKGROUND READING          | the second secon | 6409          | N N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| Morning check performed by          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0715 Rom      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Mid-day check performed by          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1225 kiks     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| Evening check performed by          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | JEH 1740      | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |

2m 7/27/01

| DATE: 6/22/01                       |           | PAGE 5 OF  | 23            |              |  |
|-------------------------------------|-----------|------------|---------------|--------------|--|
| Source                              |           | Am-241     | -             |              |  |
| Calibration Date                    |           | 4/10/2001  |               |              |  |
| Out of Cal Date                     |           | 3/31/2003  |               | 1            |  |
| Serial Number                       |           | 8920       | for ch1       |              |  |
| Instrument Channel                  | CHANNEL 1 | OUT        | 110400 10101  | 4            |  |
| High Voltage                        |           | 1.24       | Y.            | 1            |  |
| Battery Check                       |           | ok.        | 4             |              |  |
| Source Check Reading (1)            | ¥.        | 9548       |               |              |  |
| Source Check Reading (2)            | ¥/        | 9668 E     | 9417 Jell     | ]            |  |
| Source Check Reading (3)            | 1         | 4526       |               |              |  |
| Source Check Reading (4)            |           | 9578       | De            | 1            |  |
| Source Check Reading (5)            |           | 9477       |               |              |  |
| Source Check Reading (AVERAGE)      |           | 9510       | de Check u PM | also         |  |
|                                     |           |            |               |              |  |
| Direct Background reading (1)       | /         | 6468       | /             |              |  |
| Direct Background reading (2)       |           | 6472       |               |              |  |
| Direct Background reading (3)       | , de      | 6669       | , Y           |              |  |
| Direct Background reading (4)       | Y         | 6600       | Y             |              |  |
| Direct Background reading (5)       |           | i0650      |               |              |  |
| Direct Background reading (AVERAGE) |           | 4559.8     | /             |              |  |
| Efficiency = (CPM-Background) / DPM | NA        | Int.       | 0,42%         | Rm<br>1/27/0 |  |
| MID-DAY SOURCE READING              |           | 9475       | NA            | 1            |  |
| MID-DAY BACKGROUND READING          | /         | 6355       | NA            |              |  |
| EVENING SOURCE READING              | ./        | 9787 ->    | check toma    | row          |  |
| EVENING BACKGROUND READING          | , Y       | 6719       | NA            | AM           |  |
| Morning check performed by          | 7         | JALH 0710  | 10            | 1            |  |
| Mid-day check performed by          |           | 16105 1230 | KU            |              |  |
| Evening check performed by          |           | JRH 1714   | /             |              |  |

### FIDLER Serial Number A951P/A402Q

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| DATE: 623/01                          |           | PAGE 6 OF    | = 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
|---------------------------------------|-----------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Source                                |           | Am-241       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Calibration Date                      |           | 4/10/2001    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Out of Cal Date                       |           | 3/31/2003    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Serial Number                         |           | 8920         | .tor Ch 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |
| Source emission rate                  |           | 254925 b/min | 710400 for out                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |
|                                       | CHANNEL 1 | 001          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| High Voltage                          | /         | 1.24         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Battery Check                         |           | ok           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Source Check Reading (1)              | - Hu      | 9904         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Source Check Reading (2)              | ×/        | 9674         | J.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |
| Source Check Reading (3)              | /         | 9805         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Source Check Reading (4)              | /         | 10007        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Source Check Reading (5)              |           | 9721         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Source Check Reading (AVERAGE)        |           | 9822.        | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |
|                                       |           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Direct Background reading (1)         | /         | 6752         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Direct Background reading (2)         |           | 6702         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Direct Background reading (3)         | , Y       | 6833         | de la companya de la  |  |  |  |
| Direct Background reading (4)         | *         | 6795         | ~                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |
| Direct Background reading (5)         |           | 6868         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| Direct Background reading (AVERAGE)   |           | 6790         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
|                                       | 117       | 12-11.       | D.43%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |
| Efficiency = (CPWI-Background) / DPWI | IVI       |              | 01(515                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |
| MID-DAY SOURCE READING                |           | 9731         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| MID-DAY BACKGROUND READING            |           | 6543         | 1 Martin Contraction of the second se |  |  |  |
| EVENING SOURCE READING                | Y         | 9430         | ×                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |
| EVENING BACKGROUND READING            | K/        | 6303         | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |
| Morning check performed by            |           | JULIA - +2+3 | 0825                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| Mid-day check performed by            |           | JR(+ 1213    | y th                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| Evening check performed by            |           | JRH 1617     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |

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FIDLER Serial Number-A968P/A367Q

|           | PAGE 7 OF  | = 23                                                   |  |
|-----------|------------|--------------------------------------------------------|--|
|           | Am-241     |                                                        |  |
| 1/25/2001 |            |                                                        |  |
|           | A968P      | 6-161                                                  |  |
|           | 254925 dpm | 710420 for sit                                         |  |
| CHANNEL 1 | OUT        |                                                        |  |
| /         | j.24 *     |                                                        |  |
|           | ok         |                                                        |  |
| 11        | 9402       | N                                                      |  |
| 2ª        | 9366       |                                                        |  |
|           | 9521       |                                                        |  |
|           | 9251       |                                                        |  |
|           | 9312       |                                                        |  |
|           | 9372       | V                                                      |  |
|           |            |                                                        |  |
|           | 6223       | /                                                      |  |
|           | 6367       |                                                        |  |
| H.        | 6335       | X                                                      |  |
| 4/        | 6585       | 4                                                      |  |
|           | 6354       |                                                        |  |
|           | 6373       | V                                                      |  |
| NR        | +.205      | 0,42%                                                  |  |
|           | 9175 91    | 09 JRH                                                 |  |
|           | 6279       | 1                                                      |  |
| i d       | 9356       |                                                        |  |
| ×/        | 6351       | , ya                                                   |  |
|           | JIELY 0740 | 1                                                      |  |
|           | JRH 1200   |                                                        |  |
| 1/        | 114. 1530  | /                                                      |  |
|           | CHANNEL 1  | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ |  |

Rom 7/27/21

## FIDLER Serial Number A951P/A402Q

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| DATE: 612510                        |              | PAGE & OF    | = 23              |      |
|-------------------------------------|--------------|--------------|-------------------|------|
| Source                              |              | Am-241       |                   |      |
| Calibration Date                    |              | 4/10/2001    |                   |      |
| Out of Cal Date                     |              | 3/31/2003    |                   |      |
| Serial Number                       |              | 8920         | for Ch1           |      |
| Source emission rate                |              | 254925 b/min | 710100 tor 201    |      |
|                                     | CHANNEL      | 001          | $\langle \rangle$ |      |
| High Voltage                        | /            | 1.24         |                   |      |
| Battery Check                       |              | ok           | $\geq$            |      |
| Source Check Reading (1)            | ¥/           | 9287         | $\geq$            |      |
| Source Check Reading (2)            | ¥/           | 9471         |                   |      |
| Source Check Reading (3)            |              | 9251         | $\geq$            |      |
| Source Check Reading (4)            |              | 9222         | $\geq$            |      |
| Source Check Reading (5)            |              | 9354         |                   |      |
| Source Check Reading (AVERAGE)      |              | 9317         | $\geq$            |      |
|                                     |              |              |                   |      |
| Direct Background reading (1)       | 6335 W       | $\ge$        | $\geq$            |      |
| Direct Background reading (2)       | 6175         | $\ge$        |                   |      |
| Direct Background reading (3)       | 6211         | >            |                   |      |
| Direct Background reading (4)       | 6360         | $\geq$       | $\geq$            |      |
| Direct Background reading (5)       | 6371         | $\geq$       | $\geq$            |      |
| Direct Background reading (AVERAGE) | 6290         | >            | >                 |      |
| Efficiency = (CPM-Background) / DPM | 1.2%         | 0.43%        |                   | 2500 |
| MID-DAY SOURCE READING              | 9523 OUT     | R/A          | $\searrow$        |      |
| MID-DAY BACKGROUND READING          | 6,266        | > <          | $\sim$            |      |
| EVENING SOURCE READING              | \$\$q1779260 | NA           | $\geq$            |      |
| EVENING BACKGROUND READING          | 6324         | > <          | $\geq$            |      |
| Morning check performed by じゅースン    | Rom 7: Da    | $\ge$        |                   |      |
| Mid-day check performed by          | Jmk 1214     | $\geq$       | $\geq$            |      |
| Evening check performed by          | KIK 1035     | > <          |                   |      |

| DATE: 02601                            |             | PAGE 9 0     | F 23          |  |  |  |
|----------------------------------------|-------------|--------------|---------------|--|--|--|
| Source                                 |             | Am-241       |               |  |  |  |
| Calibration Date                       |             | 4/10/2001    |               |  |  |  |
| Out of Cal Date                        |             | 3/31/2003    | 1 11 4        |  |  |  |
| Serial Number                          |             | 254925 b/min | thr (h)       |  |  |  |
| Instrument Channel                     | CHANNEL 1   | OUT          | 10.00 forsu   |  |  |  |
| High Voltage                           | 1           | 1.2Y         | $\leq$        |  |  |  |
| Battery Check                          |             | OIC          |               |  |  |  |
| Source Check Reading (1)               |             | 9382         | $\geq$        |  |  |  |
| Source Check Reading (2)               | Kick        | 9337         |               |  |  |  |
| Source Check Reading (3)               |             | 9302         |               |  |  |  |
| Source Check Reading (4)               |             | 9356         |               |  |  |  |
| Source Check Reading (5)               |             | 9192         | $\geq$        |  |  |  |
| Source Check Reading (AVERAGE)         |             | 9313.8       |               |  |  |  |
|                                        |             |              |               |  |  |  |
| Direct Background reading (1)          | 6274 00     | $\geq$       |               |  |  |  |
| Direct Background reading (2)          | 10466       | $\geq$       |               |  |  |  |
| Direct Background reading (3)          | 6397        | $\geq$       |               |  |  |  |
| Direct Background reading (4)          | 6476        | $\geq$       |               |  |  |  |
| Direct Background reading (5)          | 6446        | $\geq$       |               |  |  |  |
| Direct Background reading (AVERAGE)    | 6411.8      |              |               |  |  |  |
| Efficiency = (CPM-Background) / DPM    | 2,41013     | 1-19070      | P.M.<br>7(27( |  |  |  |
| MID-DAY SOURCE READING                 | 9188 04     | NA           |               |  |  |  |
| MID-DAY BACKGROUND READING             | Ge188       | > <          |               |  |  |  |
| EVENING SOURCE READING                 | 9102        | NA           |               |  |  |  |
| EVENING BACKGROUND READING             | 6172V       | $\geq$       | $\geq$        |  |  |  |
| Morning check performed by Sun wy 65°F | KUK 6720    | $\geq$       |               |  |  |  |
| Mid-day check performed by             | Rom 12:10p  | $\geq$       |               |  |  |  |
| Evening check performed by             | Rom \$5:45p |              |               |  |  |  |

## FIDLER Serial Number A951P/A402Q

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| DATE: 6/27/01                       |                                                                                                                 | PAGE (> OF   | : 23              |     |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------|-------------------|-----|
| Source                              | multi a far a star a | Am-241       |                   |     |
| Calibration Date                    |                                                                                                                 | 4/10/2001    |                   |     |
| Out of Cal Date                     |                                                                                                                 | 3/31/2003    |                   |     |
| Serial Number                       |                                                                                                                 | 8920         | for (h1           |     |
| Source emission rate                | CHANNEL 1                                                                                                       | 254925 b/min | 710435 For out    |     |
| High Voltage                        | OTANILE I                                                                                                       | 1.24         | $\leq$            |     |
| Battery Check                       | /                                                                                                               | ok           | $\geq$            |     |
| Source Check Reading (1)            | , Y                                                                                                             | 9328         | $\geq$            |     |
| Source Check Reading (2)            |                                                                                                                 | 9319         | $\geq$            |     |
| Source Check Reading (3)            |                                                                                                                 | 9421         | $\langle$         |     |
| Source Check Reading (4)            |                                                                                                                 | 450>         | $\langle \rangle$ |     |
| Source Check Reading (5)            |                                                                                                                 | 9343         | $\geq$            |     |
| Source Check Reading (AVERAGE)      |                                                                                                                 | G384         | $\geq$            |     |
|                                     |                                                                                                                 |              |                   |     |
| Direct Background reading (1)       | 6401                                                                                                            | $\ge$        | $\geq$            |     |
| Direct Background reading (2)       | 6491                                                                                                            | $\geq$       | $\geq$            |     |
| Direct Background reading (3)       | 6372                                                                                                            | $\geq$       |                   |     |
| Direct Background reading (4)       | 6514                                                                                                            | $\geq$       | $\geq$            |     |
| Direct Background reading (5)       | 6577                                                                                                            | $\geq$       | $\geq$            |     |
| Direct Background reading (AVERAGE) | 6471                                                                                                            | $\geq$       | $\geq$            |     |
| Efficiency = (CPM-Background) / DPM | tit                                                                                                             | 2.41%        |                   | 200 |
| MID-DAY SOURCE READING              | 9398                                                                                                            | NA           | $\geq$            |     |
| MID-DAY BACKGROUND READING          | 6463                                                                                                            | $\times$     | >                 |     |
| EVENING SOURCE READING              | 9357                                                                                                            | NA           | >                 |     |
| EVENING BACKGROUND READING          | 6241                                                                                                            | $\ge$        | >                 |     |
| Morning check performed by          | RM 7:50a                                                                                                        | $\geq$       | $\geq$            |     |
| Mid-day check performed by          | AML 1230                                                                                                        |              | $\geq$            |     |
| Evening check performed by          | JMK 1743                                                                                                        | >            | ><                | •   |

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## FIDLER Serial Number A951P/A402Q

| DATE: 0/28 01                                                                                                                                                                                            |                                              | PAGE 11 OF           | 23                |              |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------|-------------------|--------------|--|
| Source                                                                                                                                                                                                   |                                              | Am-241               |                   |              |  |
| Calibration Date                                                                                                                                                                                         | 4/10/2001                                    |                      |                   |              |  |
| Out of Cal Date                                                                                                                                                                                          |                                              | 3/31/2003            |                   |              |  |
| Serial Number                                                                                                                                                                                            |                                              | 8920<br>254925 b/min | for chil          |              |  |
| Instrument Channel                                                                                                                                                                                       | CHANNEL 1                                    | OUT                  | 10 TUS Torout     |              |  |
| High Voltage                                                                                                                                                                                             | 1                                            | 1.24                 | $\searrow$        |              |  |
| Battery Check                                                                                                                                                                                            |                                              | ok                   | $\geq$            |              |  |
| Source Check Reading (1)                                                                                                                                                                                 | *                                            | 9494                 | $\geq$            |              |  |
| Source Check Reading (2)                                                                                                                                                                                 | 4                                            | 9605                 | $\langle$         |              |  |
| Source Check Reading (3)                                                                                                                                                                                 |                                              | 9591                 | $\langle \rangle$ |              |  |
| Source Check Reading (4)                                                                                                                                                                                 |                                              | 9625                 | $\langle$         |              |  |
| Source Check Reading (5)                                                                                                                                                                                 |                                              | 9475                 | $\langle \rangle$ |              |  |
| Source Check Reading (AVERAGE)                                                                                                                                                                           | V                                            | 9538                 |                   | ole          |  |
| Direct Background reading (1)<br>Direct Background reading (2)<br>Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE) | 6607<br>6750<br>6566<br>6423<br>6537<br>6577 |                      |                   |              |  |
| Efficiency = (CPM-Background) / DPM                                                                                                                                                                      | NA                                           | 9.42%                | $\ge$             | Rm<br>7/27/0 |  |
| MID-DAY SOURCE READING                                                                                                                                                                                   | 9445                                         | NA                   | $\sim$            |              |  |
| MID-DAY BACKGROUND READING                                                                                                                                                                               | 6433                                         | $\geq$               | $\geq$            |              |  |
| EVENING SOURCE READING                                                                                                                                                                                   | 9412                                         | MA                   | $\geq$            |              |  |
| EVENING BACKGROUND READING                                                                                                                                                                               | 6289                                         | $\geq$               | $\sim$            |              |  |
| Morning check performed by sumy 72015                                                                                                                                                                    | JR4 0710                                     | $\geq$               | $\geq$            |              |  |
| Mid-day check performed by                                                                                                                                                                               | JR-14 1216                                   | $\geq$               | $\geq$            |              |  |
| Evening check performed by                                                                                                                                                                               | Rom 05:450                                   |                      |                   |              |  |

# FIDLER Serial Number A951P/A402Q

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| DATE: 6/29/01                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PAGE 12 OF  | = 23                      |      |  |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------|------|--|
| Source                              | and the second sec | Am-241      | a marine and a second and |      |  |
| Calibration Date                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4/10/2001   |                           |      |  |
| Out of Cal Date                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3/31/2003   |                           |      |  |
| Serial Number                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 8920 to-(h1 |                           |      |  |
| Instrument Channel                  | CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OUT         | 110 100 10101             |      |  |
| High Voltage                        | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.24        | $\leq$                    |      |  |
| Battery Check                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OK          | $\leq$                    |      |  |
| Source Check Reading (1)            | ×                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 9564        | $\geq$                    |      |  |
| Source Check Reading (2)            | E/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 9677        | $\geq$                    |      |  |
| Source Check Reading (3)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9604        |                           |      |  |
| Source Check Reading (4)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9422        | $\geq$                    |      |  |
| Source Check Reading (5)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9494        | $\geq$                    |      |  |
| Source Check Reading (AVERAGE)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9552        |                           |      |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |             |                           |      |  |
| Direct Background reading (1)       | 6561                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | $\geq$      | $\geq$                    |      |  |
| Direct Background reading (2)       | 6470                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | $\geq$      |                           |      |  |
| Direct Background reading (3)       | 6507                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | $\geq$      |                           |      |  |
| Direct Background reading (4)       | 6557                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | $\geq$      |                           |      |  |
| Direct Background reading (5)       | 6827                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | $\geq$      | $\geq$                    |      |  |
| Direct Background reading (AVERAGE) | 6584                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | >           |                           |      |  |
| Efficiency = (CPM-Background) / DPM | 4206                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.42%       |                           | 2000 |  |
| MID-DAY SOURCE READING              | 9449                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NA          | $\searrow$                |      |  |
| MID-DAY BACKGROUND READING          | 6474                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | > <         | $\geq$                    |      |  |
| EVENING SOURCE READING              | 9450                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NA          | $\geq$                    |      |  |
| EVENING BACKGROUND READING          | 6408                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | $\geq$      | $\geq$                    |      |  |
| Morning check performed by          | Ron 07:45a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | $\geq$      |                           |      |  |
| Mid-day check performed by          | AML 1135 282                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | $\geq$      |                           |      |  |
| Evening check performed by          | 12411525                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | >           |                           |      |  |

| DATE: 7/10/01                         |                                                       | PAGE 13 OF                                                                                                                                         | 23                |         |
|---------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------|
| Source                                | an thing back may be to the the<br>the state that the | Am-241                                                                                                                                             |                   | *       |
| Calibration Date                      |                                                       | 4/10/2001                                                                                                                                          |                   |         |
| Out of Cal Date                       |                                                       | 3/31/2003                                                                                                                                          | 1                 |         |
| Serial Number                         |                                                       | 8920                                                                                                                                               | for (h1           | -       |
| Source emission rate                  |                                                       | 254925 b/min                                                                                                                                       | 712202 62-202     | -       |
|                                       | CHANNEL                                               | 124                                                                                                                                                | $\bigcirc$        |         |
| High Voltage                          |                                                       | 1.21                                                                                                                                               | $\langle \rangle$ |         |
| Battery Check                         |                                                       | 000                                                                                                                                                | $\langle \rangle$ |         |
| Source Check Reading (1)              | N/                                                    | 4465                                                                                                                                               | $\langle \rangle$ | -       |
| Source Check Reading (2)              | V.                                                    | -464-2 JILH                                                                                                                                        | $\langle \rangle$ |         |
| Source Check Reading (3)              |                                                       | 9690                                                                                                                                               | $\langle \rangle$ |         |
| Source Check Reading (4)              |                                                       | 9.559                                                                                                                                              | $\geq$            |         |
| Source Check Reading (5)              |                                                       | 9580                                                                                                                                               | ><                |         |
| Source Check Reading (AVERAGE)        |                                                       | 9574                                                                                                                                               | >                 | 102     |
|                                       |                                                       |                                                                                                                                                    |                   |         |
| Direct Background reading (1)         | 6550 (DUT)                                            | $\ge$                                                                                                                                              | $\ge$             | ]       |
| Direct Background reading (2)         | 6549                                                  | $\geq$                                                                                                                                             | ><                |         |
| Direct Background reading (3)         | 6524                                                  | > <                                                                                                                                                | >                 |         |
| Direct Background reading (4)         | 6658                                                  | $\geq$                                                                                                                                             | $\geq$            |         |
| Direct Background reading (5)         | 6642                                                  | $\geq$                                                                                                                                             | >                 |         |
| Direct Background reading (AVERAGE)   | 6585                                                  | >                                                                                                                                                  | $\geq$            |         |
| Efficiency = (CPM-Background) / DPM   | 0,42%                                                 | 1.17 %                                                                                                                                             | $\times$          | 212710) |
| MID-DAY SOURCE READING                | 9376                                                  | NA                                                                                                                                                 | $\searrow$        |         |
| MID-DAY BACKGROUND READING            | 6363                                                  | X                                                                                                                                                  | $\searrow$        |         |
| EVENING SOURCE READING                | 9178                                                  | NA                                                                                                                                                 | X                 |         |
| EVENING BACKGROUND READING            | 6309V                                                 | $\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{$ | $\searrow$        | 1       |
| Morning check performed by 654 (fund  | 0733.Jeff                                             | >>                                                                                                                                                 | X                 | ]       |
| Mid-day check performed by 74°F 5-my  | 12:00 Rom                                             | $\geq$                                                                                                                                             | >                 |         |
| Evening check performed by 78°F Sunny | 5:23p.Rom                                             | $\searrow$                                                                                                                                         | >                 |         |

## FIDLER Serial Number A951P/A402Q

| DATE: 7/11/21                            |              | PAGE 14 OF   | 23                |              |
|------------------------------------------|--------------|--------------|-------------------|--------------|
| Source                                   | Am-241       |              |                   |              |
| Calibration Date                         | 4/10/2001    |              |                   |              |
| Out of Cal Date                          | 3/31/2003    |              |                   |              |
| Serial Number                            | 8920 tor Ch1 |              |                   |              |
| Source emission rate                     |              | 254925 b/min | 710400 torat      | 1            |
| Instrument Channel                       | CHANNEL 1    | OUT          |                   | -            |
| High Voltage                             | 1. Z 4 OUT   | Fill         |                   |              |
| Battery Check                            | ok V         |              |                   |              |
| Source Check Reading (1)                 | 4296 Rm      | 9296         | $\langle \rangle$ |              |
| Source Check Reading (2)                 | /            | 9193         |                   |              |
| Source Check Reading (3)                 |              | 9332         |                   |              |
| Source Check Reading (4)                 | .0/          | 9303         | $\geq$            |              |
| Source Check Reading (5)                 |              | 9267         |                   | 1            |
| Source Check Reading (AVERAGE)           | /            | 9278         | >                 |              |
|                                          |              |              |                   |              |
| Direct Background reading (1)            | 6218000      | $\geq$       | $\geq$            |              |
| Direct Background reading (2)            | 6450         |              |                   |              |
| Direct Background reading (3)            | 6335         |              |                   |              |
| Direct Background reading (4)            | GZYB         |              | $\geq$            |              |
| Direct Background reading (5)            | 6482         |              |                   |              |
| Direct Background reading (AVERAGE)      | 6347 V       | >            | >                 |              |
| Efficiency = (CPM-Background) / DPM      | NA           | 0.41%        | $\times$          | 2m<br>7/2×11 |
| MID-DAY SOURCE READING                   | NA           | 9288         | >                 |              |
| MID-DAY BACKGROUND READING               | 636560       | $\ge$        |                   |              |
| EVENING SOURCE READING                   | NA           | 9355         | $\geq$            |              |
| EVENING BACKGROUND READING               | 6424 CUT     | $\geq$       | $\geq$            | 31           |
| Morning check performed by Rom Sunny 72° | 7:07n        | $\geq$       | $\geq$            |              |
| Mid-day check performed by Dim Sunny 12  | 12:390       | $\geq$       |                   |              |
| Evening check performed by Rm Gunny 74°  | 5:00         | $\geq$       |                   |              |

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| DATE: 7/12/01                         |              | PAGE 15 OF   | 23            |               |
|---------------------------------------|--------------|--------------|---------------|---------------|
| Source                                | Am-241       |              |               |               |
| Calibration Date                      | 4/10/2001    |              |               |               |
| Out of Cal Date                       | 3/31/2003    |              |               |               |
| Serial Number                         | 8920 to- (h1 |              |               |               |
| Source emission rate                  |              | 254925 b/min | 710400 torout | -             |
| Instrument Channel                    | CHANNEL 1    | OUT          | $\geq$        | -             |
| High Voltage                          | 1            | 1.24         | $\geq$        |               |
| Battery Check                         |              | ok           | $\geq$        |               |
| Source Check Reading (1)              |              | 9509         | $\geq$        |               |
| Source Check Reading (2)              | NY NY        | 9272         | $\geq$        |               |
| Source Check Reading (3)              | *            | 9275         | $\geq$        |               |
| Source Check Reading (4)              |              | 9339         | $\geq$        |               |
| Source Check Reading (5)              |              | 9437         | $\geq$        |               |
| Source Check Reading (AVERAGE)        |              | 9366         | >             |               |
|                                       |              |              |               |               |
| Direct Background reading (1)         | 6396 OUT     | $\ge$        | $\ge$         | ]             |
| Direct Background reading (2)         | 6456         | $\geq$       | $\geq$        |               |
| Direct Background reading (3)         | 6515         | $\geq$       | $\geq$        |               |
| Direct Background reading (4)         | 6403         | $\sim$       | $\geq$        |               |
| Direct Background reading (5)         | 6393         | $\geq$       | $\geq$        |               |
| Direct Background reading (AVERAGE)   | 6433         | $\geq$       | >             |               |
| Efficiency = (CPM-Background) / DPM   | 4.15%        | 2,412/2      | $\times$      | Rm<br>7/27/21 |
| MID-DAY SOURCE READING                | NA           | 9284         | >             | 1             |
| MID-DAY BACKGROUND READING            | G180 @       | >            | >             | ]             |
| EVENING SOURCE READING                | NA           | 9294         | $\geq$        |               |
| EVENING BACKGROUND READING            | 6397647      | X            | $\geq$        |               |
| Morning check performed by Rom troop  | 692 surny    | $\geq$       | $\geq$        |               |
| Mid-day check performed by Pm 17:20   | 68° sourcest | $\geq$       | $\geq$        |               |
| Evening check performed by Dom 5: 15p | 68° PC       | >            | >             |               |

## FIDLER Serial Number A951P/A402Q

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| DATE: 7/13/21                         |                | PAGE 16 OF   | 23                |           |  |
|---------------------------------------|----------------|--------------|-------------------|-----------|--|
| Source                                | Am-241         |              |                   |           |  |
| Calibration Date                      | 4/10/2001      |              |                   |           |  |
| Out of Cal Date                       |                | 3/31/2003    |                   |           |  |
| Serial Number                         | 8920 tor (h1   |              |                   |           |  |
| Source emission rate                  | CHANNEL 1      | 254925 D/min | 710400 for sit    |           |  |
|                                       | CHANNEL        | 1.2.1/       | $\triangleleft$   |           |  |
|                                       |                | 1.29         | $\langle \rangle$ |           |  |
|                                       |                | do an        | $\langle \rangle$ |           |  |
| Source Check Reading (1)              | ,3/            | 9272         |                   |           |  |
| Source Check Reading (2)              | 4              | 9969         | $\langle \rangle$ |           |  |
| Source Check Reading (3)              |                | 4318         | $\langle \rangle$ |           |  |
| Source Check Reading (4)              | /              | 9513         | $\langle$         |           |  |
| Source Check Reading (5)              |                | 9445         |                   |           |  |
| Source Check Reading (AVERAGE)        |                | 9402         | $\geq$            |           |  |
|                                       | a An           |              |                   |           |  |
| Direct Background reading (1)         | 6555 0         | $\geq$       |                   |           |  |
| Direct Background reading (2)         | 6 364          | $\geq$       |                   |           |  |
| Direct Background reading (3)         | 6363           | $\geq$       | $\geq$            |           |  |
| Direct Background reading (4)         | 6327           | $\geq$       | $\geq$            |           |  |
| Direct Background reading (5)         | 6330           | $\geq$       |                   |           |  |
| Direct Background reading (AVERAGE)   | 6388 V         | $\geq$       | $\geq$            |           |  |
| Efficiency = (CPM-Background) / DPM   | UK4+870        | 8,42013      | R                 | m<br>27/2 |  |
| MID-DAY SOURCE READING                | Contraction of | 9512         | $\geq$            |           |  |
| MID-DAY BACKGROUND READING            | 6397 aut       | > <          |                   |           |  |
| EVENING SOURCE READING                | ille           | NA           | $\geq$            |           |  |
| EVENING BACKGROUND READING            | be             | ><           | >                 |           |  |
| Morning check performed by Pom 7.47a  | Sunny 680      | >            | > <               |           |  |
| Mid-day check performed by AMC 1200   | Clovery 70°F   | > <          |                   |           |  |
| Evening check performed by Notusel in | 144            | >            |                   |           |  |
| HETERA                                | 2.             |              |                   |           |  |

## FIDLER Serial Number A951P/A402Q

| DATE: 7/14/01                       |                     | PAGE 17 OF    | 23             |  |
|-------------------------------------|---------------------|---------------|----------------|--|
| Source                              | Am-241              |               |                |  |
| Calibration Date                    | 4/10/2001           |               |                |  |
| Out of Cal Date                     | 3/31/2003           |               |                |  |
| Serial Number                       | 8920 to th          |               |                |  |
| Instrument Channel                  | CHANNEL 1           | OUT           | TIDAD) LOLONT  |  |
| High Voltage                        | 1.2KU OUT           | MA            | $\leq$         |  |
| Battery Check                       | OK V                | NA            | $\geq$         |  |
| Source Check Reading (1)            | /                   | 9485          | $\geq$         |  |
| Source Check Reading (2)            |                     | 9339          |                |  |
| Source Check Reading (3)            | Jy -                | 9675          | $\langle$      |  |
| Source Check Reading (4)            |                     | 9618          | $\langle$      |  |
| Source Check Reading (5)            |                     | 9412          | $\langle$      |  |
| Source Check Reading (AVERAGE)      |                     | 9506          | $\geq$         |  |
|                                     |                     |               |                |  |
| Direct Background reading (1)       | 6496 (4)            | $\geq$        | $\geq$         |  |
| Direct Background reading (2)       | 6295                | $\geq$        | $\geq$         |  |
| Direct Background reading (3)       | 6351                |               | $\geq$         |  |
| Direct Background reading (4)       | 6391                |               | $\geq$         |  |
| Direct Background reading (5)       | 10485               |               | $\geq$         |  |
| Direct Background reading (AVERAGE) | 6404 V              | $\ge$         |                |  |
| Efficiency = (CPM-Background) / DPM | NA                  | 9, 44212      | Mm<br>Particis |  |
| MID-DAY SOURCE READING              | 9454 -              | $\rightarrow$ | $\searrow$     |  |
| MID-DAY BACKGROUND READING          | 6434 Cut            | >             | $\geq$         |  |
| EVENING SOURCE READING              | , X                 | NA            | $\geq$         |  |
| EVENING BACKGROUND READING          | - For               | $\geq$        | $\geq$         |  |
| Morning check performed by Kuc 070  | U Cloudy, cool 630A | $\geq$        | $\geq$         |  |
| Mid-day check performed by ANLIDO   | Cloory, 65°F        | 25            | $\sim$         |  |
| Evening check performed by          | not used infm       | $\geq$        | $\geq$         |  |

| DATE: 7/15/01                           |                       | PAGE 18 OF   | 23                |  |
|-----------------------------------------|-----------------------|--------------|-------------------|--|
| Source                                  |                       | Am-241       |                   |  |
| Calibration Date                        |                       | 4/10/2001    |                   |  |
| Out of Cal Date                         |                       | 3/31/2003    | 1 1.6             |  |
| Serial Number                           | 8920 for Chi          |              |                   |  |
| Source emission rate                    |                       | 254925 b/min | Tionos forost     |  |
|                                         | CHANNEL I             | 001          | $\langle \rangle$ |  |
| High Voltage                            |                       | 1.2          |                   |  |
| Battery Check                           |                       | ok           |                   |  |
| Source Check Reading (1)                |                       | 9489         |                   |  |
| Source Check Reading (2)                | V                     | 9841         |                   |  |
| Source Check Reading (3)                |                       | 4713         |                   |  |
| Source Check Reading (4)                |                       | 9524         | $\geq$            |  |
| Source Check Reading (5)                |                       | 9562         |                   |  |
| Source Check Reading (AVERAGE)          |                       | 9626         |                   |  |
|                                         |                       |              | and an and        |  |
| Direct Background reading (1)           | 6557(01)              | $\ge$        |                   |  |
| Direct Background reading (2)           | 6671                  | $\geq$       |                   |  |
| Direct Background reading (3)           | 6544                  | $\geq$       | $\geq$            |  |
| Direct Background reading (4)           | 6474                  | $\geq$       | $\geq$            |  |
| Direct Background reading (5)           | 6473                  | $\geq$       | $\geq$            |  |
| Direct Background reading (AVERAGE)     | 6544                  | >            | $\geq$            |  |
| Efficiency = (CPM-Background) / DPM     | #1.20%                | 2.43 %       | P.m.<br>7/127     |  |
| MID-DAY SOURCE READING                  | NA                    | 9422         | $\searrow$        |  |
| MID-DAY BACKGROUND READING              | 6493 (00)             | $\searrow$   |                   |  |
| EVENING SOURCE READING                  | MA                    | 9352         | $\geq$            |  |
| EVENING BACKGROUND READING              | 6583(201)             | >            | > <               |  |
| Morning check performed by 2 mm 7:40n o | humid<br>prereast 050 | >            |                   |  |
| Mid-day check performed by form 12.00p  | SLAMLY 72°            | $\geq$       | $\searrow$ 1      |  |
| Evening check performed by KK 5 153 1   | P. Cloud , 27°F       | >            | > <               |  |

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Battery Chans hetween mering t midday check

| DATE: 7/16/01                        |                  | PAGE 19 OF   | 23                |  |
|--------------------------------------|------------------|--------------|-------------------|--|
| Source                               | i<br>4           | Am-241       | the state         |  |
| Calibration Date                     |                  | 4/10/2001    |                   |  |
| Out of Cal Date                      |                  | 3/31/2003    |                   |  |
| Serial Number                        |                  | 8920 tor (h1 |                   |  |
| Source emission rate                 | CHANNEL 4        | 254925 b/min | 110400 for out    |  |
|                                      | CHANNEL I        |              | $\langle \rangle$ |  |
| High Voltage                         | /                | 1, 2 KV      | $\sim$            |  |
| Battery Check                        |                  | ok           | $\geq$            |  |
| Source Check Reading (1)             |                  | 9560         | $\geq$            |  |
| Source Check Reading (2)             | A.               | 9474         | $\geq$            |  |
| Source Check Reading (3)             |                  | 9603         | $\geq$            |  |
| Source Check Reading (4)             |                  | 9636         |                   |  |
| Source Check Reading (5)             |                  | 9651         |                   |  |
| Source Check Reading (AVERAGE)       |                  | 9585         | $\geq$            |  |
|                                      |                  |              |                   |  |
| Direct Background reading (1)        | 6625             | $\ge$        | $\geq$            |  |
| Direct Background reading (2)        | 6647             | $\geq$       | $\geq$            |  |
| Direct Background reading (3)        | 6575             | $\geq$       | $\geq$            |  |
| Direct Background reading (4)        | 6535             | $\geq$       | $\geq$            |  |
| Direct Background reading (5)        | 6518             | $\geq$       | $\geq$            |  |
| Direct Background reading (AVERAGE)  | 6586             | $\geq$       |                   |  |
| Efficiency = (CPM-Background) / DPM  | \$1+87/0         | 8,42%        | 2m<br>7/27        |  |
| MID-DAY SOURCE READING               | 9440-            |              | $\searrow$        |  |
| MID-DAY BACKGROUND READING           | 6355647          | $\ge$        | $\sim$            |  |
| EVENING SOURCE READING               | .9448 _          |              | $\geq$            |  |
| EVENING BACKGROUND READING           | 6267 aut         | $\times$     | >                 |  |
| Morning check performed by Rom 7:15c | 68° 50411)       | $\geq$       | $\geq$            |  |
| Mid-day check performed by AML 1200  | -1305 SURAUSICSM | $\geq$       | $\geq$            |  |
| Evening check performed by Kks 84177 | o 73 % cloudy    | >            |                   |  |

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| DATE: 7/17/01                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PAGE 26 OI   | = 23          |               |  |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|---------------|--|
| Source                              | and a second second<br>Second second second<br>Second second second<br>Second second second<br>Second second second<br>Second second second<br>Second second second<br>Second second sec | Am-241       |               |               |  |
| Calibration Date                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4/10/2001    |               |               |  |
| Out of Cal Date                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3/31/2003    |               |               |  |
| Serial Number                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8920 tor (h1 |               |               |  |
| Source emission rate                | CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 254925 b/min | 710400 50-002 |               |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 001          |               |               |  |
| High Voltage                        | 1.6 -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | TV           |               |               |  |
| Battery Check                       | ok —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | $\geq$        |               |  |
| Source Check Reading (1)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 9953         | $\geq$        |               |  |
| Source Check Reading (2)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 9937         | $\geq$        |               |  |
| Source Check Reading (3)            | J. J.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 9826         | $\geq$        |               |  |
| Source Check Reading (4)            | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 9705         | $\geq$        |               |  |
| Source Check Reading (5)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 9630         | $\geq$        |               |  |
| Source Check Reading (AVERAGE)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 9810         | $\geq$        |               |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |               |               |  |
| Direct Background reading (1)       | 6908 00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | $\geq$       | $\geq$        |               |  |
| Direct Background reading (2)       | 6766                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\geq$       | $\geq$        |               |  |
| Direct Background reading (3)       | 6758                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\geq$       | $\geq$        |               |  |
| Direct Background reading (4)       | 6688                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\geq$       | $\geq$        |               |  |
| Direct Background reading (5)       | 6685                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\geq$       |               |               |  |
| Direct Background reading (AVERAGE) | 6761                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | >            |               |               |  |
| Efficiency = (CPM-Background) / DPM | 9.43%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.2 etok     |               | 2m<br>1127/31 |  |
| MID-DAY SOURCE READING              | 9291 00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA           | $\searrow$    |               |  |
| MID-DAY BACKGROUND READING          | 6406                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\ge$        | $\geq$        |               |  |
| EVENING SOURCE READING              | 9725                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NA           | > <           |               |  |
| EVENING BACKGROUND READING          | 6656 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | >            |               |               |  |
| Morning check performed by ~ humit  | JRH 0715                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\geq$       |               | •             |  |
| Mid-day check performed by          | JRH 1200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\geq$       | $\geq$        |               |  |
| Evening check performed by          | AML 1720                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |               |               |  |
## FIDLER Serial Number A951P/A402Q

| DATE: 7/18/01                       |                | PAGE 21 OF    | = 23              |              |  |
|-------------------------------------|----------------|---------------|-------------------|--------------|--|
| Source                              | Am-241         |               |                   |              |  |
| Calibration Date                    | 4/10/2001      |               |                   |              |  |
| Out of Cai Date                     | 3/31/2003      |               |                   |              |  |
| Serial Number                       |                | 8920          | for Chi           |              |  |
| Source emission rate                |                | 254925 b/min  | 710400 for out    |              |  |
|                                     | CHAININEL      | 001           | $\langle \rangle$ |              |  |
| High Voltage                        | 1.25KV-        |               | $\sim$            |              |  |
| Battery Check                       | OK -           | $\rightarrow$ | $\geq$            |              |  |
| Source Check Reading (1)            |                | 9560          | $\geq$            |              |  |
| Source Check Reading (2)            |                | 9750          | $\geq$            |              |  |
| Source Check Reading (3)            | y              | 9607          | $\geq$            |              |  |
| Source Check Reading (4)            | /              | 9639          | $\geq$            |              |  |
| Source Check Reading (5)            |                | 9523          | $\geq$            |              |  |
| Source Check Reading (AVERAGE)      | V              | 9616          |                   |              |  |
|                                     |                |               |                   |              |  |
| Direct Background reading (1)       | 6589 MT        | $\ge$         | > <               |              |  |
| Direct Background reading (2)       | 6627           | >             | $\geq$            |              |  |
| Direct Background reading (3)       | 6589           |               | >                 |              |  |
| Direct Background reading (4)       | 6759           | $\geq$        | $\geq$            |              |  |
| Direct Background reading (5)       | 6674           | $\geq$        | $\geq$            |              |  |
| Direct Background reading (AVERAGE) | 6648V          | >             |                   |              |  |
| Efficiency = (CPM-Background) / DPM | 0,42%          | NA            | $\searrow$        | Rm<br>7/27/2 |  |
| MID-DAY SOURCE READING              | 9537 W         | 6448 +2       | $\searrow$        |              |  |
| MID-DAY BACKGROUND READING          | 6448 7         |               |                   |              |  |
| EVENING SOURCE READING              | 1 VE           | NA            | $\geq$            |              |  |
| EVENING BACKGROUND READING          |                | >             | $\geq$            |              |  |
| Morning check performed by JMK      | Fogs v 700     | $\geq$        | $\geq$            |              |  |
| Mid-day check performed by AML 12   | Opsonny 720F   | $\geq$        |                   |              |  |
| Evening check performed by          | not used in PM | >             | ><                |              |  |

#### FIDLER Serial Number A951P/A402Q

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| DATE: 7/23/01                            |              | PAGE 22 OF    | 23              |                 |  |
|------------------------------------------|--------------|---------------|-----------------|-----------------|--|
| Source                                   | Am-241       |               |                 |                 |  |
| Calibration Date                         | 4/10/2001    |               |                 |                 |  |
| Out of Cal Date                          | 3/31/2003    |               |                 |                 |  |
| Serial Number                            | 8920 tor ch1 |               |                 |                 |  |
| Source emission rate                     | CHANNEL 4    | 254925 D/min* | 712400 Foron    |                 |  |
| High Voltage                             | CHANNEL I    | 1.2KV         | $\triangleleft$ |                 |  |
| Battery Check                            |              | ÖK            | $\leq$          |                 |  |
| Source Check Reading (1)                 | V            | 9614 6595 FE  | $\geq$          |                 |  |
| Source Check Reading (2)                 | 4            | 9521          | $\geq$          |                 |  |
| Source Check Reading (3)                 |              | 9392          | $\langle$       |                 |  |
| Source Check Reading (4)                 |              | 9792          |                 |                 |  |
| Source Check Reading (5)                 | /            | 9427          | $\langle$       |                 |  |
| Source Check Reading (AVERAGE)           | V            | 9549,2        |                 |                 |  |
|                                          |              |               |                 |                 |  |
| Direct Background reading (1)            | 6595 OUT     | $\geq$        | $\geq$          | 11.11           |  |
| Direct Background reading (2)            | 6581         | $\geq$        | $\geq$          |                 |  |
| Direct Background reading (3)            | 6613         | $\geq$        | 25              |                 |  |
| Direct Background reading (4)            | 6616         | $\geq$        | $\geq$          | 1.              |  |
| Direct Background reading (5)            | 6754         |               |                 |                 |  |
| Direct Background reading (AVERAGE)      | 6632 V       | >             | $\times$        | 1               |  |
| Efficiency = (CPM-Background) / DPM      | NA           | 0,412/0       | $\ge$           | 2000<br>7/27/01 |  |
| MID-DAY SOURCE READING                   | 9440 -       | D             | $\times$        |                 |  |
| MID-DAY BACKGROUND READING               | 6589 (OUT)   | > <           | >               |                 |  |
| EVENING SOURCE READING                   | 9517 -       |               | $\geq$          |                 |  |
| EVENING BACKGROUND READING               | 6335 OUT     | $\geq$        | $\geq$          |                 |  |
| Morning check performed by               | KIK 0930     | $\geq$        | $\geq$          | 9<br>72         |  |
| Mid-day check performed by Simy 75 homid | JUK 1214     | $\geq$        | $\geq$          |                 |  |
| Evening check performed by BL Haz 78     | OMK          |               | ><              |                 |  |

#### FIDLER Serial Number A951P/A402Q

| DATE: 7-24-01                          |                | PAGE ጋን OF   | 23                |  |  |  |
|----------------------------------------|----------------|--------------|-------------------|--|--|--|
| Source                                 |                | Am-241       |                   |  |  |  |
| Calibration Date                       |                | 4/10/2001    |                   |  |  |  |
| Out of Cal Date                        | 3/31/2003      |              |                   |  |  |  |
| Serial Number                          |                | 8920         | for ch1           |  |  |  |
| Source emission rate                   |                | 254925 D/min | 712422 forort     |  |  |  |
|                                        | CHANNEL I      | 001          | $\langle \rangle$ |  |  |  |
| High Voltage                           | /              | 1.22         | $\sim$            |  |  |  |
| Battery Check                          |                | OK           | $\geq$            |  |  |  |
| Source Check Reading (1)               |                | 9812         | $\geq$            |  |  |  |
| Source Check Reading (2)               | 2              | 9675         | $\geq$            |  |  |  |
| Source Check Reading (3)               |                | 9740         | $\geq$            |  |  |  |
| Source Check Reading (4)               |                | 9685         | $\geq$            |  |  |  |
| Source Check Reading (5)               |                | 9788         | $\geq$            |  |  |  |
| Source Check Reading (AVERAGE)         |                | 9740         | >                 |  |  |  |
|                                        |                |              |                   |  |  |  |
| Direct Background reading (1)          | 6599 QUT]      | X            | $\sim$            |  |  |  |
| Direct Background reading (2)          | 6720           | $\geq$       | $\geq$            |  |  |  |
| Direct Background reading (3)          | 6668           |              | $\geq$            |  |  |  |
| Direct Background reading (4)          | 6767           | $\geq$       | $\geq$            |  |  |  |
| Direct Background reading (5)          | 6749           | $\geq$       | $\geq$            |  |  |  |
| Direct Background reading (AVERAGE)    | 6700.6         | $\geq$       | >                 |  |  |  |
| Efficiency = (CPM-Background) / DPM    | 1-19% FUC      | 2.43%        | $\searrow$        |  |  |  |
| MID-DAY SOURCE READING                 | 9636 DUT       | NA           | $\ge$             |  |  |  |
| MID-DAY BACKGROUND READING             | 6749           | >            | >                 |  |  |  |
| EVENING SOURCE READING                 | 9454           | NA           | > <               |  |  |  |
| EVENING BACKGROUND READING             | 10377          | $\geq$       | > <               |  |  |  |
| Morning check performed by JK 0714 76  | WELLAST HUMID  | $\geq$       | $\geq$            |  |  |  |
| Mid-day check performed by JK 4201 76° | OVIRLAST HJMIN | $\geq$       | $\geq$            |  |  |  |
| Evening check performed by JVK 1737 78 | OCAST HUMID    | $\geq$       | >                 |  |  |  |

Last Pay instrument was within Calibration Pate PARSONS ENGINEERING SCIENCE

2m 7/27/01

| DATE: 7-26-01                          | PAGE 7 OF 20                           | 0        |  |  |  |  |
|----------------------------------------|----------------------------------------|----------|--|--|--|--|
| Source                                 | Am-241                                 |          |  |  |  |  |
| Calibration Date                       | 3/20/2001                              |          |  |  |  |  |
| Out of Cal Date                        | 9/16                                   | 5/2001   |  |  |  |  |
| Serial Number                          | A983P                                  |          |  |  |  |  |
|                                        | CHANNEL 1                              | OUT      |  |  |  |  |
| High Voltage                           |                                        | 1.22 kV  |  |  |  |  |
| Battery Check                          |                                        | DK       |  |  |  |  |
| Source Check Reading (1)               | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | 10436    |  |  |  |  |
| Source Check Reading (2)               | ¥"                                     | 10370    |  |  |  |  |
| Source Check Reading (3)               |                                        | 10415    |  |  |  |  |
| Source Check Reading (4)               |                                        | 10542    |  |  |  |  |
| Source Check Reading (5)               |                                        | 10320    |  |  |  |  |
| Source Check Reading (AVERAGE)         |                                        | 10416.6  |  |  |  |  |
|                                        |                                        |          |  |  |  |  |
| Direct Background reading (1)          | /                                      | 7194     |  |  |  |  |
| Direct Background reading (2)          |                                        | 7216     |  |  |  |  |
| Direct Background reading (3)          |                                        | 7388     |  |  |  |  |
| Direct Background reading (4)          |                                        | 7375     |  |  |  |  |
| Direct Background reading (5)          |                                        | 7320     |  |  |  |  |
| Direct Background reading (AVERAGE)    |                                        | 7310.6   |  |  |  |  |
| Efficiency = (CPM-Background) / DPM    |                                        | 0.4372%  |  |  |  |  |
| MID-DAY SOURCE READING                 | 10143 (UT)                             |          |  |  |  |  |
| MID-DAY BACKGROUND READING             | 6966                                   |          |  |  |  |  |
| EVENING SOURCE READING                 | 1003                                   | J.       |  |  |  |  |
| EVENING BACKGROUND READING             | 6854                                   | <u> </u> |  |  |  |  |
| Morning check performed by JMK 74 FAIN | 0714                                   |          |  |  |  |  |
| Mid-day check performed by JTMIC 13° S | on P/2 1200                            |          |  |  |  |  |
| Evening check performed by JK 74°      | SUNKY 1730                             | /        |  |  |  |  |

| DATE: 7-27-01                          | PAGE 18 OF 20 |                 |  |  |
|----------------------------------------|---------------|-----------------|--|--|
| Source                                 | An            | -241            |  |  |
| Calibration Date                       | 3/20/2001     |                 |  |  |
| Out of Cal Date                        | 9/16/2001     |                 |  |  |
| Serial Number                          | JMH AS        | 183P            |  |  |
| Source emission rate                   | CHANNEL 1     | 25 upm 11040dpm |  |  |
|                                        |               | OK 1.72 kV      |  |  |
| Battery Check                          |               | DK              |  |  |
| Source Check Reading (1)               |               | 10247           |  |  |
| Source Check Reading (2)               | 5             | 10214           |  |  |
| Source Check Reading (3)               | ¥             | 10264           |  |  |
| Source Check Reading (4)               | /             | 10196           |  |  |
| Source Check Reading (5)               |               | 10283           |  |  |
| Source Check Reading (AVERAGE)         |               | 10240,8         |  |  |
|                                        |               |                 |  |  |
| Direct Background reading (1)          | /             | 7176            |  |  |
| Direct Background reading (2)          | /             | 1068            |  |  |
| Direct Background reading (3)          |               | 7014            |  |  |
| Direct Background reading (4)          | ¥             | 7168            |  |  |
| Direct Background reading (5)          |               | 7124            |  |  |
| Direct Background reading (AVERAGE)    |               | 7/10            |  |  |
| Efficiency = (CPM-Background) / DPM    | NA            | 0.44%           |  |  |
| MID-DAY SOURCE READING                 | , UC          | 10060           |  |  |
| MID-DAY BACKGROUND READING             |               | 6965            |  |  |
| EVENING SOURCE READING                 | FIRSE NOT     | USEP PM         |  |  |
| EVENING BACKGROUND READING             | (, (,         | · · ·           |  |  |
| Morning check performed by JK 0708 68  | F Sunny       |                 |  |  |
| Mid-day check performed by JX Book 123 | TT 72° Surry  | , w             |  |  |
| Evening check performed by             | NA            |                 |  |  |

Battery changed 9t midday

| DATE: 7/28/01                       | PAGE 19 OF 2      | 0                |  |
|-------------------------------------|-------------------|------------------|--|
| Source                              | Am-241            |                  |  |
| Calibration Date                    | 3/20/2001         |                  |  |
| Out of Cal Date                     | 9/16              | 5/2001           |  |
| Serial Number                       | AS                | 183P             |  |
| Source emission rate                | 2549<br>CHANNEL 4 | 25 dpm -/10, 400 |  |
|                                     |                   | 001              |  |
| High Voltage                        | +.22 LM           | 1.22             |  |
| Battery Check                       | OKKW              | OIL              |  |
| Source Check Reading (1)            |                   | 10418            |  |
| Source Check Reading (2)            |                   | 10485            |  |
| Source Check Reading (3)            | , <u>``</u> ``    | 10239            |  |
| Source Check Reading (4)            |                   | 10337            |  |
| Source Check Reading (5)            |                   | 10496            |  |
| Source Check Reading (AVERAGE)      |                   | 10395            |  |
|                                     |                   |                  |  |
| Direct Background reading (1)       |                   | 7:30             |  |
| Direct Background reading (2)       |                   | 7217             |  |
| Direct Background reading (3)       |                   | 7295             |  |
| Direct Background reading (4)       |                   | 7123             |  |
| Direct Background reading (5)       |                   | 7083             |  |
| Direct Background reading (AVERAGE) |                   | 7171,6           |  |
|                                     | X 11              | 1 (157701        |  |
| Efficiency = (CPM-Background) / DPM | NA                | 0/1224,0         |  |
| MID-DAY SOURCE READING              |                   | 10254            |  |
| MID-DAY BACKGROUND READING          | 1×                | 6944             |  |
| EVENING SOURCE READING              | <u>f</u>          | 10399            |  |
|                                     |                   | 6989             |  |
| Morning check performed by          | XLK               |                  |  |
| Mid-day check performed by JFL 3CC  | Surry 740         | Ku               |  |
| Evening check performed by JMK (BCO | Srmy 74°          |                  |  |

| <b>FIDLER Serial Nur</b> | nber A983P/A367Q |
|--------------------------|------------------|
|--------------------------|------------------|

| DATE: 7 29-01                           |                                                                                                  | PAGE 20 OF | 20                |
|-----------------------------------------|--------------------------------------------------------------------------------------------------|------------|-------------------|
| Source                                  | nanan ( Alba salaya nana kita na katala ( katala<br>a sanansi majari, aya na tanahina mabanat ta | Am-241     |                   |
| Calibration Date                        |                                                                                                  | 3/20/2001  |                   |
| Out of Cal Date                         |                                                                                                  | 9/16/2001  |                   |
| Serial Number                           |                                                                                                  | A983P      |                   |
| Source emission rate                    |                                                                                                  | 254925 dpm |                   |
| Instrument Channel                      | CHANNEL 1                                                                                        | 001        | $\langle \rangle$ |
| High Voltage                            |                                                                                                  | 1.2        | $\geq$            |
| Battery Check                           |                                                                                                  | ok         | $\geq$            |
| Source Check Reading (1)                |                                                                                                  | 10306      | $\geq$            |
| Source Check Reading (2)                | LA CONTRACT                                                                                      | 10455      | $\geq$            |
| Source Check Reading (3)                |                                                                                                  | 10295      | $\geq$            |
| Source Check Reading (4)                |                                                                                                  | 10316      | $\geq$            |
| Source Check Reading (5)                |                                                                                                  | 10335      | $\geq$            |
| Source Check Reading (AVERAGE)          |                                                                                                  | 10340.4    | >                 |
|                                         |                                                                                                  |            |                   |
| Direct Background reading (1)           | 7081 (OUT)                                                                                       | $\ge$      | $\geq$            |
| Direct Background reading (2)           | 7124                                                                                             | $\sim$     | $\searrow$        |
| Direct Background reading (3)           | 7226                                                                                             | $\geq$     | $\geq$            |
| Direct Background reading (4)           | 7231                                                                                             | $\geq$     | $\sim$            |
| Direct Background reading (5)           | 7104                                                                                             | $\geq$     | $\geq$            |
| Direct Background reading (AVERAGE)     | 7153.2                                                                                           | >          | >                 |
| Efficiency = (CPM-Background) / DPM     | 0.4486%                                                                                          | >          | $\ge$             |
| MID-DAY SOURCE READING                  | NA                                                                                               | 10 196     | $\ge$             |
| MID-DAY BACKGROUND READING              | 6083 ar                                                                                          | $\ge$      | $\geq$            |
| EVENING SOURCE READING                  | NA                                                                                               | 10318      | $\geq$            |
| EVENING BACKGROUND READING              | 6980                                                                                             | $\geq$     | $\geq$            |
| Morning check performed by JK 070770    | - Suns Licht HAZE                                                                                | $\geq$     | $\geq$            |
| Mid-day check performed by JMK 72° Sunn | , 1220                                                                                           | $\geq$     | $\geq$            |
| Evening check performed by Rom 76° oce  | reast 3:55p                                                                                      | >          | >                 |

#### SENECA ARMY DEPOT SEAD-12 RI/FS 64401 6 (2701 Rm

| Site: Seneca Army Depot |                 |                 |         |
|-------------------------|-----------------|-----------------|---------|
| Project: SEAD-12        | 1               |                 |         |
| Team:                   | a service and   |                 |         |
|                         | Page 1 of 20    |                 |         |
| Instrument Type         | Bicron Fidler   | Bicron Fidler   |         |
| АКА                     | Edler           | Fidler          |         |
| Make                    | Bicron          | Bicron          |         |
| Model                   | Analyst         | Analyst         |         |
| Serial Number           | A983P           | A983P           |         |
| Calibration Date        | 3/20/2001       | 3/20/2001       |         |
| Out of Cal Date         | 9/16/2001       | 9/16/2001       |         |
| Probe:                  | Nal Scintilator | Nal Scintilator |         |
| Make                    | Bicron          | Bicron          |         |
| Model                   | G-5             | G-5             |         |
| Serial Number           | A367Q           | A367Q           | 1.1     |
| Calibration Date        | 3/20/2001       | 3/20/2001       |         |
| Out of Cal Date         | 9/16/2001       | 9/16/2001       | 1000    |
| Source                  | Am-241          | Am-241          |         |
| Source type             | Low E gamma     | Low E gamma     |         |
| Calibration Date        | 4/10/2001       | 4/10/2001       |         |
| Out of Cal Date         | 3/31/2003       | 3/31/2003       | 1       |
| Serial Number           | 8920            | 6/2/1924        |         |
| Source emission rate    | 254925 dpm      | 254925 dpm      | 712420  |
| Instrument Channel      | Channel 1       | Out             | en      |
| instrument efficiency   |                 | 1.30%           | 7/27/21 |
| 2 Sigma Range           | /               | , 9737-10681    |         |
| 3 Sigma Range           |                 | 9501-10917      |         |

710-00

Am-241 window function check Not completed

PARSONS MAIN, INC.



| CLIENT                                               |                                                                  |               | JOB NO<br>ВҮ2б                                                                                                                             |                          | EET 2 OF 20<br>re 6/27/01 |
|------------------------------------------------------|------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------|
| Fidler                                               | A983P                                                            | 08:55a        | CKD<br>75° S-nny                                                                                                                           | REV<br>CHA               | NINEL CUT                 |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | ckgrond<br>5<br>7<br>7<br>8<br>7<br>8<br>9:25a<br>9:35a<br>9:35a |               | Am-241<br>10122<br>10124<br>10257<br>9928<br>9928<br>10072<br>10179<br>10072<br>10179<br>10250<br>10318<br>10651<br>10760<br>1062<br>10176 | Source<br>9:17a<br>9:30a |                           |
| Aue =<br>0 =<br>20 =<br>3.0 =<br>6828<br>6744        | 6996<br>84<br>168<br>252<br>t<br>7164 = 20<br>7248 = 30          | 1000<br>990 6 | Avc = 107<br>$\sigma = 101$<br>$2\sigma = 207$<br>$3\sigma = 303$<br>7                                                                     | 2<br>+<br>10411<br>10512 | F26<br>F30                |

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A 983 FIDLER Serial Number A945P/A3780\_ Kik

| DATE: (e           | 127      | 01                     |                  | PAGE 3 OF  | 20           |
|--------------------|----------|------------------------|------------------|------------|--------------|
| Source             |          |                        | Am-241           |            |              |
| Calibration Date   |          | W = 5/25/2004 3/2 3/01 |                  |            |              |
| Out of Cal Date    |          | Y                      | UN -11/21/2001 9 | 1610,      |              |
| Serial Number      |          |                        |                  | A945P      | tz-641       |
| Source emission ra | ite      |                        |                  | 254925 dpm | 712423 Egrat |
| Instrument Channe  | l        |                        | CHANNEL 1        | OUT        | $\geq$       |
| High Voltage       |          |                        |                  |            | $\geq$       |
| Battery Check      |          |                        |                  |            | $\geq$       |
| Source Check Rea   | ding (1) |                        | , 5              | Ducker     | >            |
| Source Check Rea   | ding (2) | ·                      | nitial           |            | $\langle$    |
| Source Check Rea   | ding (3) |                        | c k              | ect        | $\geq$       |
| Source Check Rea   | ding (4) |                        |                  |            | $\geq$       |
| Source Check Rea   | ding (5) |                        |                  |            | $\geq$       |
| Source Check Rea   | ding (A  | VERAGE)                |                  |            |              |
|                    |          |                        |                  |            |              |
| Direct Background  | reading  | (1)                    | 0                | $\ge$      | >            |
| Direct Background  | reading  | (2)                    | ital             | $\ge$      | $\searrow$   |
| Direct Background  | reading  | (3)                    | Tynctical        | $\geq$     | $\geq$       |
| Direct Background  | reading  | (4)                    | apeck            | $\geq$     |              |
| Direct Background  | reading  | (5)                    |                  | $\geq$     | $\geq$       |
| Direct Background  | reading  | (AVERAGE)              |                  | $\geq$     |              |
|                    |          |                        |                  |            |              |
| Efficiency = (CPM- | Backgro  | ound) / DPM            | NA               | NA         |              |
|                    |          | ING                    | 1the             | 101107     | $\searrow$   |
|                    |          | READING                | - TOTOT          | 6937       |              |
| EVENING SOURCE     | EREAL    | DING                   |                  | 9926       | $\leq$       |
| EVENING BACKG      |          | READING                |                  | 6947       | $\leq$       |
| Morning check perf | ormed l  | by                     | NA               | $\searrow$ | >>           |
| Mid-day check perf | ormed I  | ру                     | AHL 1230         | $\searrow$ | $\searrow$   |
| Evening check perf | ormed    | by                     | JMK 1137         | $\geq$     | > <          |

Aqo3P

FIDLER Serial Number A945P/A378Q

| DATE: 6128101                             |                                    | PAGE 4 OF    | 20             |  |
|-------------------------------------------|------------------------------------|--------------|----------------|--|
| Source                                    | Am-241                             |              |                |  |
| Calibration Date                          | - <del>5/25/20</del> 01 3 /20 / 01 |              |                |  |
| Out of Cal Date                           | - <u>11/21/2001</u> -9/10/01       |              |                |  |
| Serial Number                             |                                    | A945P        | for Ch1        |  |
| Source emission rate                      |                                    | 254925 dpm 2 | 712402 For DUT |  |
| Instrument Channel                        | CHANNEL 1                          | OUT          | $\geq$         |  |
| High Voltage                              |                                    | 1.24         | $\geq$         |  |
| Battery Check                             |                                    | ok           | $\geq$         |  |
| Source Check Reading (1)                  |                                    | 10104        | $\geq$         |  |
| Source Check Reading (2)                  | 127                                | 10017        | $\geq$         |  |
| Source Check Reading (3)                  |                                    | 10142        | $\geq$         |  |
| Source Check Reading (4)                  |                                    | 10049        | $\geq$         |  |
| Source Check Reading (5)                  | /                                  | 10099        | $\geq$         |  |
| Source Check Reading (AVERAGE)            | /                                  | 10082        | >              |  |
|                                           |                                    |              |                |  |
| Direct Background reading (1)             | 711300                             | $\ge$        | $\geq$         |  |
| Direct Background reading (2)             | 7097                               | $\geq$       | $\geq$         |  |
| Direct Background reading (3)             | 7101                               | $\sim$       | $\geq$         |  |
| Direct Background reading (4)             | 6977                               | $\sim$       | $\geq$         |  |
| Direct Background reading (5)             | 6965                               | $\sim$       | $\geq$         |  |
| Direct Background reading (AVERAGE)       | 7051                               | $\geq$       | >              |  |
| Efficiency = (CPM-Background) / DPM       |                                    | 0.43%        | $\searrow$     |  |
| MID-DAY SOURCE READING                    |                                    | 10119        | >              |  |
| MID-DAY BACKGROUND READING                | W                                  | 6934         | $\geq$         |  |
| EVENING SOURCE READING                    | Y                                  | 10236        | $\geq$         |  |
| EVENING BACKGROUND READING                |                                    | 6862         | $\geq$         |  |
| Morning check performed by source har 22" | J24 0745                           | $\geq$       | $\sim$         |  |
| Mid-day check performed by                | JRH 1212                           | $\geq$       | $\geq$         |  |
| Evening check performed by                | Rom 5:37p                          | >            | >              |  |

EM 7127721

| DATE: 6129/01                       | PAGE 5 OF 20    |                      |                |
|-------------------------------------|-----------------|----------------------|----------------|
| Source                              | Am-241          |                      |                |
| Calibration Date                    | 3/20            | 3/20/2001            |                |
| Out of Cal Date                     | 9/16            | 5/2001               |                |
| Serial Number                       | AS              | 983P fr (h1          |                |
| Source emission rate                | CHANNEL 1       | 25 dpm 710422 for ot |                |
| High Voltage                        | /               | 1.24                 |                |
| Battery Check                       |                 | ok                   |                |
| Source Check Reading (1)            |                 | 10195                |                |
| Source Check Reading (2)            | ¥               | 10153                |                |
| Source Check Reading (3)            | ¥               | 10189                |                |
| Source Check Reading (4)            | /               | 12277                |                |
| Source Check Reading (5)            |                 | 10246                |                |
| Source Check Reading (AVERAGE)      |                 | 12212                |                |
|                                     |                 |                      |                |
| Direct Background reading (1)       |                 | 122TZ PM             | 6993           |
| Direct Background reading (2)       |                 | 7063                 | 7063           |
| Direct Background reading (3)       | <u> </u>        | 6971                 |                |
| Direct Background reading (4)       | ¥               | 6928                 |                |
| Direct Background reading (5)       |                 | 6540                 |                |
| Direct Background reading (AVERAGE) |                 | 6959                 |                |
| Efficiency = (CPM-Background) / DPM | D. 46% /        | + +.5%               | Rtm<br>7/27/01 |
| MID-DAY SOURCE READING              | 9939 am         |                      |                |
| MID-DAY BACKGROUND READING          | 7028            |                      |                |
| EVENING SOURCE READING              | 10201           | N.                   |                |
| EVENING BACKGROUND READING          | 0845            | <u> </u>             |                |
| Morning check performed by          | RAM 2725a 22'   |                      |                |
| Mid-day check performed by          | AML 1130 Hazz F | /                    |                |
| Evening check performed by          | JRH 1530        | /                    |                |

| DATE Old                             |               |                      | ٦            |
|--------------------------------------|---------------|----------------------|--------------|
| DATE: 714(0)                         | PAGE () OF 20 | - 044                | x.           |
| Calibration Date                     |               | 1/2001               | £            |
| Out of Cal Date                      | 9/16          | 5/2001               | -            |
| Serial Number                        | AS            | 183P for ch1         | 1            |
| Source emission rate                 | 2549          | 25 dpm 712400 for 10 | ł            |
| Instrument Channel                   | CHANNEL 1     | OUT                  | ]            |
| High Voltage                         | /             | 1.14                 | 1            |
| Battery Check                        | /             | . k                  |              |
| Source Check Reading (1)             | V/            | 10158                | 1            |
| Source Check Reading (2)             | L L           | 10294                | 1            |
| Source Check Reading (3)             |               | 10381                | 4            |
| Source Check Reading (4)             |               | 10370                | 1            |
| Source Check Reading (5)             | /             | 10281                | 4            |
| Source Check Reading (AVERAGE)       |               | 10297                |              |
|                                      |               |                      |              |
| Direct Background reading (1)        |               | 7021                 |              |
| Direct Background reading (2)        |               | 7027                 |              |
| Direct Background reading (3)        |               | 6912                 |              |
| Direct Background reading (4)        | ¥             | 6958                 |              |
| Direct Background reading (5)        |               | 7011                 |              |
| Direct Background reading (AVERAGE)  |               | 6986                 |              |
| Efficiency = (CPM-Background) / DPM  | D.4776-       | 11307.               | 2m<br>7/27/2 |
| MID-DAY SOURCE READING               |               | 9940                 |              |
| MID-DAY BACKGROUND READING           |               | 6877                 |              |
| EVENING SOURCE READING               | 5             | 9987                 |              |
| EVENING BACKGROUND READING           | ¥             | 6943                 |              |
| Morning check performed by 70'F SUNT |               | JR4 0735             |              |
| Mid-day check performed by           |               | JRU 1155             |              |
| Evening check performed by           |               | JR4 1740             |              |

#### FIDLER Serial Number A983P/A367Q

PARSONS ENGINEERING SCIENCE

| DATE: 7/10/01                        | PAGE 7 OF 20 |              |  |
|--------------------------------------|--------------|--------------|--|
| Source                               | r Am-241     |              |  |
| Calibration Date                     | 3/20/2001    |              |  |
| Out of Cal Date                      | 9/16         | 5/2001       |  |
| Serial Number                        | A9           | 183P for (h1 |  |
| Source emission rate                 | CHANNEL 1    |              |  |
|                                      |              | 001          |  |
| High Voltage                         |              | 1.24         |  |
| Battery Check                        | /            | olc.         |  |
| Source Check Reading (1)             | ×/           | 10328        |  |
| Source Check Reading (2)             | ¥/           | 10334        |  |
| Source Check Reading (3)             |              | 10210        |  |
| Source Check Reading (4)             |              | 10164        |  |
| Source Check Reading (5)             |              | 10224        |  |
| Source Check Reading (AVERAGE)       |              | 10256        |  |
|                                      |              |              |  |
| Direct Background reading (1)        |              | 7006         |  |
| Direct Background reading (2)        |              | 7150         |  |
| Direct Background reading (3)        | X            | 7087         |  |
| Direct Background reading (4)        | 7            | 7007         |  |
| Direct Background reading (5)        |              | 7132         |  |
| Direct Background reading (AVERAGE)  |              | 7076         |  |
|                                      |              |              |  |
| Efficiency = (CPM-Background) / DPM  | 0,45%-       | D [250/.     |  |
|                                      | 2            | 10/07        |  |
| MID-DAY SOURCE READING               |              | 7027         |  |
| MID-DAY BACKGROUND READING           | /            | +023         |  |
| EVENING SOURCE READING               | ¥/           | 9876         |  |
| EVENING BACKGROUND READING           | ¥.           | 6884         |  |
| Morning check performed by 65°E Hund |              | 0720 JELL    |  |
| Mid-day check performed by           |              | 1210 JRH     |  |
| Evening check performed by           |              | 1736 JRH     |  |

Rom 7127(21

| DATE: 7/11/21                       | PAGE 8 OF 20   |                     |  |
|-------------------------------------|----------------|---------------------|--|
| Source                              | An             | 1-241               |  |
| Calibration Date                    | 3/20/2001      |                     |  |
| Out of Cal Date                     | 9/16           | 5/2001              |  |
| Serial Number                       | AS             | 183P for (n1        |  |
| Source emission rate                | 25492          | 25 dpm 713437 for 2 |  |
| Instrument Channel                  | CHANNEL 1      | OUT                 |  |
| High Voltage                        |                | 1,22                |  |
| Battery Check                       |                | ͽk                  |  |
| Source Check Reading (1)            |                | 9995                |  |
| Source Check Reading (2)            |                | 10027               |  |
| Source Check Reading (3)            |                | 10042               |  |
| Source Check Reading (4)            |                | 10052               |  |
| Source Check Reading (5)            |                | 9998                |  |
| Source Check Reading (AVERAGE)      |                | 10029               |  |
|                                     |                |                     |  |
| Direct Background reading (1)       | /              | 6867                |  |
| Direct Background reading (2)       |                | 7005                |  |
| Direct Background reading (3)       | .Y             | 6762                |  |
| Direct Background reading (4)       | ¥              | 6800                |  |
| Direct Background reading (5)       |                | 6783                |  |
| Direct Background reading (AVERAGE) |                | 6843                |  |
| Efficiency = (CPM-Background) / DPM | 7,457,51       | 1.25%               |  |
|                                     |                |                     |  |
| MID-DAY SOURCE READING              | NA             | 10132               |  |
| MID-DAY BACKGROUND READING          | NA             | 6965                |  |
| EVENING SOURCE READING              | Notu           | set in              |  |
| EVENING BACKGROUND READING          | afte           | (nos)               |  |
| Morning check performed by          | Rin 720 sunny  |                     |  |
| Mid-day check performed by          | KLK 1230 JUMME | . cut               |  |
| Evening check performed by          | NA             |                     |  |

Cable switched due to intermittent problem with HV supply PARSONS ENGINEERING SCIENCE

2m 7127101

bat= 0K HV=1.22

| DATE: 7/12/01                           | PAGE 9 OF 20 |                       |              |
|-----------------------------------------|--------------|-----------------------|--------------|
| Source                                  | An           | 1-241                 | I            |
| Calibration Date                        | 3/20/2001    |                       |              |
| Out of Cal Date                         | 9/16<br>     | 183P ( 1              |              |
| Source emission rate                    | 2549         | 25 dpm 712422 for out |              |
| Instrument Channel                      | CHANNEL 1    | OUT                   | 1            |
| High Voltage                            | /            | 1.22                  |              |
| Battery Check                           |              | ok                    |              |
| Source Check Reading (1)                |              | 12:28                 |              |
| Source Check Reading (2)                |              | 10264                 |              |
| Source Check Reading (3)                | 4            | 10191                 |              |
| Source Check Reading (4)                |              | 10228                 |              |
| Source Check Reading (5)                |              | 10051                 |              |
| Source Check Reading (AVERAGE)          |              | 10132                 |              |
|                                         |              |                       |              |
| Direct Background reading (1)           | 7000 -       | $\rightarrow$         |              |
| Direct Background reading (2)           | 6850 -       | -> Rom                |              |
| Direct Background reading (3)           | 6848 -       | > done with           |              |
| Direct Background reading (4)           | 6883 _       | > Selector at         |              |
| Direct Background reading (5)           | 6910 -       | -> "out"              |              |
| Direct Background reading (AVERAGE)     | 6898 -       | >                     |              |
| Efficiency = (CPM-Background) / DPM     | 1.275/0      | 0.46%                 | Rm<br>71,776 |
| MID-DAY SOURCE READING                  |              | 10336                 |              |
| MID-DAY BACKGROUND READING              |              | 6897                  |              |
| EVENING SOURCE READING                  | 4 VI         | 9926                  |              |
| EVENING BACKGROUND READING              |              | 6900                  |              |
| Morning check performed by Rm Sonny 68" | 7:202        |                       |              |
| Mid-day check performed by Rm accest    | 68° 12:05p   | 11th                  |              |
| Evening check performed by PSm PC       | 68° 5:20p    |                       |              |
| Battery change                          | ed for mi    | dda, check            | с            |

PARSONS ENGINEERING SCIENCE

| DATE.       77.13(0)       PAGE 10 0F 10         Source       Am-241         Calibration Date       3/20/2001         Out of Cal Date       9/16/2001         Serial Number       A983P         Source emission rate       254925 dpm         Instrument Channel       CHANNEL 1         High Voltage       I. 2 2         Battery Check       ok         Source Check Reading (1)       I. 2 3 0 2         Source Check Reading (2)       I.0 2 9 8         Source Check Reading (3)       I.0 2 2 1         Source Check Reading (4)       I.0 0 7 9         Source Check Reading (5)       I.0 1 44 | 1              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Calibration Date       3/20/2001         Out of Cal Date       9/16/2001         Serial Number       A983P         Source emission rate       254925 dpm         Instrument Channel       CHANNEL 1         High Voltage       0.1 22         Battery Check       ok         Source Check Reading (1)       103.02         Source Check Reading (2)       10 2.98         Source Check Reading (3)       10 2.21         Source Check Reading (4)       10 0.79         Source Check Reading (5)       10 1.44                                                                                         | 1.14           |
| Out of Cal Date9/16/2001Serial NumberA983PSource emission rate254925 dpmInstrument ChannelCHANNEL 1High VoltageI. 2 2.Battery CheckokSource Check Reading (1)I0302Source Check Reading (2)I0 2 98Source Check Reading (3)I0 7 21Source Check Reading (4)I 0 0 7 9Source Check Reading (5)I 0 1 4 9                                                                                                                                                                                                                                                                                                     | な際             |
| Serial NumberA983PHore ChainSource emission rate254925 dpm71/14/30 for orInstrument ChannelCHANNEL 1OUTHigh Voltage1.22.Battery CheckokSource Check Reading (1)10302.Source Check Reading (2)10298.Source Check Reading (3)10221.Source Check Reading (4)10079.Source Check Reading (5)10144                                                                                                                                                                                                                                                                                                           | -              |
| Source emission rate254925 dpm7/1/1/20 For orInstrument ChannelCHANNEL 1OUTHigh VoltageI. 2 2Battery Checko kSource Check Reading (1)I0302Source Check Reading (2)I0 2 98Source Check Reading (3)I0 2 21Source Check Reading (4)I0079Source Check Reading (5)I0 1 44                                                                                                                                                                                                                                                                                                                                   |                |
| Instrument ChannelCHANNEL 1OUTHigh VoltageBattery CheckSource Check Reading (1)Source Check Reading (2)Source Check Reading (3)Source Check Reading (4)Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                        | Г              |
| High VoltageI. 22Battery CheckokSource Check Reading (1)10302Source Check Reading (2)10298Source Check Reading (3)10221Source Check Reading (4)10079Source Check Reading (5)10149                                                                                                                                                                                                                                                                                                                                                                                                                      |                |
| Battery CheckokSource Check Reading (1)10302Source Check Reading (2)10298Source Check Reading (3)10221Source Check Reading (4)10079Source Check Reading (5)10149                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |
| Source Check Reading (1)         10302           Source Check Reading (2)         10298           Source Check Reading (3)         10221           Source Check Reading (4)         10079           Source Check Reading (5)         10149                                                                                                                                                                                                                                                                                                                                                             |                |
| Source Check Reading (2)         (0 2 98)           Source Check Reading (3)         10 2 2 1           Source Check Reading (4)         10079           Source Check Reading (5)         10149                                                                                                                                                                                                                                                                                                                                                                                                        |                |
| Source Check Reading (3)         10 221           Source Check Reading (4)         10079           Source Check Reading (5)         10149                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |
| Source Check Reading (4)         10079           Source Check Reading (5)         10149                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |
| Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |
| Direct Background reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |
| Direct Background reading (2) 68 52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                |
| Direct Background reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |
| Direct Background reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |
| Direct Background reading (5) 70 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                |
| Direct Background reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                |
| Efficiency = (CPM-Background) / DPM $\partial.46\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2.5m<br>7127(3 |
| MID-DAY SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |
| MID-DAY BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1              |
| EVENING SOURCE READING 9451                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ]              |
| EVENING BACKGROUND READING 6382                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ]              |
| Morning check performed by 25m 65° Sun 77 7:20a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | オ              |
| Mid-day check performed by AML 10'F clubery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>_</b>       |
| Evening check performed by Rom 5: 350 75° acrest                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1              |

| DATE: 7/14101                       | PAGE 1 OF 20     |                       | ]            |  |
|-------------------------------------|------------------|-----------------------|--------------|--|
| Source                              | Am-241           |                       |              |  |
| Calibration Date                    | 3/20/2001        |                       |              |  |
| Out of Cal Date                     | 9/16             | 9/16/2001             |              |  |
| Source emission rate                | 2549             | 25 dpm 712422 for aut | ł            |  |
| Instrument Channel                  | CHANNEL 1        | OUT                   | 1            |  |
| High Voltage                        | /                | 1.3 KV                |              |  |
| Battery Check                       |                  | OK                    |              |  |
| Source Check Reading (1)            |                  | 10203                 |              |  |
| Source Check Reading (2)            | ¥7               | 10146                 |              |  |
| Source Check Reading (3)            | /                | 10150                 |              |  |
| Source Check Reading (4)            |                  | 10000                 |              |  |
| Source Check Reading (5)            |                  | 10181                 |              |  |
| Source Check Reading (AVERAGE)      |                  | 10136                 |              |  |
|                                     |                  |                       |              |  |
| Direct Background reading (1)       |                  | 7283                  |              |  |
| Direct Background reading (2)       |                  | 6946                  |              |  |
| Direct Background reading (3)       | w.               | 6893                  |              |  |
| Direct Background reading (4)       | ¥/               | 6871                  |              |  |
| Direct Background reading (5)       |                  | 6826                  |              |  |
| Direct Background reading (AVERAGE) |                  | 6831                  |              |  |
| Efficiency = (CPM-Background) / DPM | NA               | 9,47%                 | RM<br>712761 |  |
| MID-DAY SOURCE READING              | NA               | NA                    |              |  |
| MID-DAY BACKGROUND READING          | NA               | NA                    |              |  |
| EVENING SOURCE READING              | NA               | NA                    |              |  |
| EVENING BACKGROUND READING          | NA               | NA                    |              |  |
| Morning check performed by AML 0720 | Croudy, cool, 62 | ot                    |              |  |
| Mid-day check performed by          | used wit         | 2 gamma               |              |  |
| Evening check performed by          | Spec             | Not for               |              |  |
|                                     | Sur              | eys                   |              |  |

|                                      |                                           |                 | 7            |
|--------------------------------------|-------------------------------------------|-----------------|--------------|
| DATE: 7 15 01                        | PAGE 12 OF 20                             |                 |              |
| Source                               | An | n-241           | 8            |
| Calibration Date                     | 3/20                                      | 3/20/2001       |              |
| Out of Cal Date                      | 9/16                                      | 5/2001          | 4            |
| Serial Number                        | 2549                                      | 25 dom 2 guas ( |              |
| Instrument Channel                   | CHANNEL 1                                 | OUT             | -            |
| High Voltage                         |                                           | 1.22            | 1            |
| Battery Check                        |                                           | ok              |              |
| Source Check Reading (1)             |                                           | 10151           |              |
| Source Check Reading (2)             | , Y                                       | 10055           | _            |
| Source Check Reading (3)             | ¥                                         | 12128           | _            |
| Source Check Reading (4)             |                                           | 10050           | 4            |
| Source Check Reading (5)             |                                           | 17188           | 4            |
| Source Check Reading (AVERAGE)       |                                           | 10114           |              |
|                                      |                                           |                 |              |
| Direct Background reading (1)        | 7035 OUT                                  |                 | ]            |
| Direct Background reading (2)        | 6802                                      |                 | _            |
| Direct Background reading (3)        | 6964                                      | V               |              |
| Direct Background reading (4)        | 6871                                      |                 |              |
| Direct Background reading (5)        | 6965                                      |                 | 4            |
| Direct Background reading (AVERAGE)  | 6927                                      |                 |              |
| Efficiency = (CPM-Background) / DPM  | 125°64                                    | 0,45%           | R.m<br>7/27/ |
| MID-DAY SOURCE READING               |                                           | 14              | 1            |
| MID-DAY BACKGROUND READING           | PUL                                       | MA              | ]            |
| EVENING SOURCE READING               |                                           | 9847            |              |
| EVENING BACKGROUND READING           | 6775 Kks                                  | 6725            | 1            |
| Morning check performed by Rm overce | 55 63° 8:10 a                             |                 | 4            |
| Mid-day check performed by           | not used in,                              | am              |              |
| Evening check performed by           | 5 Cloud, 78°                              |                 | ]            |

| DATE: 7/16/21                       | PAGE 13 OF 20 |                       |
|-------------------------------------|---------------|-----------------------|
| Source                              | An            | 1-241                 |
| Calibration Date                    | 3/20          | 0/2001                |
| Out of Cal Date                     | 9/16          | 5/2001                |
| Serial Number                       | A9            | 183P for Ch1          |
| Source emission rate                | 2549          | 25 dpm 712420 for 2-T |
| Instrument Channel                  | CHANNEL 1     | <u> </u>              |
| High Voltage                        |               | 1.22 kV               |
| Battery Check                       |               | 2 k                   |
| Source Check Reading (1)            |               | 10435                 |
| Source Check Reading (2)            | . JY          | 10301                 |
| Source Check Reading (3)            |               | 10422                 |
| Source Check Reading (4)            |               | 12404                 |
| Source Check Reading (5)            |               | 10240                 |
| Source Check Reading (AVERAGE)      |               | 10360                 |
|                                     |               |                       |
| Direct Background reading (1)       | /             | 7149                  |
| Direct Background reading (2)       |               | 7029                  |
| Direct Background reading (3)       | H.            | 6971                  |
| Direct Background reading (4)       | Y .           | 6829                  |
| Direct Background reading (5)       |               | 7016                  |
| Direct Background reading (AVERAGE) |               | 6999                  |
| Efficiency = (CPM-Background) / DPM | 1002          | 2 47 26               |
|                                     |               |                       |
| MID-DAY SOURCE READING              | 10388 (MT)    | /                     |
| MID-DAY BACKGROUND READING          | 7149          |                       |
| EVENING SOURCE READING              | 102491        |                       |
| EVENING BACKGROUND READING          | 10925         |                       |
| Morning check performed by Rom 2004 | 68° 5 6 9 1 1 |                       |
| Mid-day check performed by AML 1200 | 13° cinu ana  |                       |
| Evening check performed by AML      | 1720          |                       |

em 7/27/01

PARSONS ENGINEERING SCIENCE

| F | IDL | ER | Serial | Number        | A983P/A    | 3670 |
|---|-----|----|--------|---------------|------------|------|
|   |     |    | 00.101 | 1 4 1 1 0 0 1 | , ,0001.77 |      |

| DATE: 717101                         | PAGE 14 OF 20     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | I            |
|--------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Source                               | An                | 1-241                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| Calibration Date                     | 3/20/2001         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ]            |
| Out of Cal Date                      | 9/16              | 5/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |
| Serial Number                        | AS                | 983P in h1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |
| Source emission rate                 | 2549<br>CHANNEL 1 | ער יינא 25 dpm |              |
| High Voltage                         | /                 | 1.24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Battery Check                        |                   | ok                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Source Check Reading (1)             | N/                | 10590                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| Source Check Reading (2)             | Ž/                | 10501                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| Source Check Reading (3)             |                   | 10519                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| Source Check Reading (4)             |                   | 10516                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| Source Check Reading (5)             |                   | 10367                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| Source Check Reading (AVERAGE)       |                   | 10499                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
|                                      |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |
| Direct Background reading (1)        |                   | 7158                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Direct Background reading (2)        |                   | 7284                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Direct Background reading (3)        | J.                | 7033                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Direct Background reading (4)        | 4                 | 7140                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Direct Background reading (5)        |                   | 7(41                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Direct Background reading (AVERAGE)  |                   | 7151                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Efficiency = (CPM-Background) / DPM  | 0,47%             | 1 43 0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Pm<br>712710 |
| MID-DAY SOURCE READING               |                   | 996 (                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| MID-DAY BACKGROUND READING           | JU                | 7465                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| EVENING SOURCE READING               |                   | 10276                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| EVENING BACKGROUND READING           |                   | 6892                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | >            |
| Morning check performed by rang 65'F | JR4 0745          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |
| Mid-day check performed by           | JR4 1200          | KU0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |
| Evening check performed by           | AML 1715          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |

| DATE 7/18/04                        | PAGE 15 OF 20                           | )                   | 7         |  |
|-------------------------------------|-----------------------------------------|---------------------|-----------|--|
| Source                              |                                         | n-241               | -         |  |
| Calibration Date                    | 3/2                                     | 3/20/2001           |           |  |
| Out of Cal Date                     | 9/1                                     | 9/16/2001           |           |  |
| Serial Number                       | A                                       | A983P Inc (h1       |           |  |
| Source emission rate                | 2549                                    | 25 dpm 712420 63.20 | 7         |  |
| Instrument Channel                  | CHANNEL 1                               | TUO                 | ]         |  |
| High Voltage                        |                                         | 1.22                |           |  |
| Battery Check                       |                                         | OK                  |           |  |
| Source Check Reading (1)            |                                         | 10565               |           |  |
| Source Check Reading (2)            |                                         | 10505               | 1         |  |
| Source Check Reading (3)            | · <u>Y</u>                              | 10411               |           |  |
| Source Check Reading (4)            | · / / · · / · · · · · · · · · · · · · · | 10339               |           |  |
| Source Check Reading (5)            |                                         | 10283               |           |  |
| Source Check Reading (AVERAGE)      |                                         | 10421               |           |  |
|                                     |                                         |                     |           |  |
| Direct Background reading (1)       | /                                       | डाठप                | ]         |  |
| Direct Background reading (2)       |                                         | 8042                |           |  |
| Direct Background reading (3)       | out //                                  | 8011                |           |  |
| Direct Background reading (4)       | 13/                                     | 8091                |           |  |
| Direct Background reading (5)       |                                         | 8046                |           |  |
| Direct Background reading (AVERAGE) |                                         | 8059                |           |  |
| Efficiency = (CPM-Background) / DPM | NA                                      | D.33°10             | Rm<br>712 |  |
| MID-DAY SOURCE READING              |                                         | 10091               |           |  |
| MID-DAY BACKGROUND READING          | NA                                      | 6866                | 1         |  |
| EVENING SOURCE READING              |                                         | not used in PM      | ]         |  |
| EVENING BACKGROUND READING          |                                         | NA                  | ]         |  |
| Norning check performed by 6730 JAK | FOLGY TOO                               |                     | ]         |  |
| Mid-day check performed by          | SUMAY 73°                               | FUE                 | ]         |  |
| Evening check performed by          | NA                                      |                     |           |  |

### A 953 P FIDLER Serial Number-A951P/A402Q

| DATE: 7-25-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | PAGE 16 OF   | 20                |               |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|-------------------|---------------|--|
| Source and the second se | Am-241     |              |                   |               |  |
| Calibration Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4/10/2001  |              |                   |               |  |
| Out of Cal Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3/31/2003  |              |                   |               |  |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | 8920 for (h1 |                   |               |  |
| Source emission rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 01100      | 254925 b/min | 710400 for out    |               |  |
| Instrument Channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | CHANNEL 1  | 001          | $\langle \rangle$ |               |  |
| High Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <i></i>    | 1.22KV       | $\geq$            |               |  |
| Battery Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | /          | OK           | $\langle$         |               |  |
| Source Check Reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            | 10410        | $\langle$         |               |  |
| Source Check Reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ¥/         | 10413        | $\langle$         |               |  |
| Source Check Reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | /          | 10157        | $\geq$            |               |  |
| Source Check Reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            | 10237        | >                 |               |  |
| Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            | 10415        | $\geq$            |               |  |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | /          | 10326.4      |                   |               |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |              |                   |               |  |
| Direct Background reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7088 (MT)  | $\geq$       | $\geq$            |               |  |
| Direct Background reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 6982       | $\geq$       | $\geq$            |               |  |
| Direct Background reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7110       | $\geq$       | $\geq$            |               |  |
| Direct Background reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7196       | $\geq$       | $\geq$            |               |  |
| Direct Background reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 6986       | $\geq$       | $\geq$            |               |  |
| Direct Background reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 7072       |              |                   |               |  |
| Efficiency = (CPM-Background) / DPM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 12770 -    | PD, 4636     | $\ge$             | Rm<br>7127101 |  |
| MID-DAY SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 10290 OUT) | MA           | >                 | -             |  |
| MID-DAY BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 6953       | $\searrow$   | $\searrow$        |               |  |
| EVENING SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 103250     | NA           | $\ge$             |               |  |
| EVENING BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 7012       | $\geq$       | $\geq$            |               |  |
| Morning check performed by JK 0710 75°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | HAZE HUMID | $\geq$       | $\geq$            |               |  |
| Mid-day check performed by NX 114876                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CEAR       | $\geq$       | $\geq$            |               |  |
| Evening check performed by $\mathcal{N}_{173578}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | P/C HUMIP  |              | >                 |               |  |

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| Site: Seneca Arm | ny Depot  |            |           |           |
|------------------|-----------|------------|-----------|-----------|
| Project: SEAD-12 | 2         | _          |           |           |
|                  |           |            | Page 1 of | 35        |
| Instrument Type  |           | A          | VB        |           |
| AKA              |           | pho        | swich     |           |
| Make             |           | Luc        | dlum      |           |
| Model            |           | 22         | 224       |           |
| Serial Number    |           | 119        | 9815      |           |
| Calibration Date |           | 5/30       | /2001     |           |
| Out of Cal Date  |           | 11/29      | 9/2001    |           |
| Probe:           | Al        | pha        |           | Beta      |
| Make             |           | Luc        | dlum      |           |
| Model            |           | 43         | -1-1      |           |
| Serial Number    |           | PR1        | 55183     |           |
| Calibration Date |           | 5/30       | /2001     |           |
| Out of Cal Date  |           | 11/29      | 9/2001    |           |
| Source           | Th        | -230       | 1         | Гс-99     |
|                  | Alpha     | Beta       | Alpha     | Beta      |
| Calibration Date | 4/10      | /2001      | 4/1       | 0/2001    |
| Out of Cal Date  | 3/31/2003 |            | 3/3       | 1/2003    |
| Serial Number    | 184       | 1-94       | 10        | )39-92    |
| Source emission  | 88        | 8880 11100 |           | 1100      |
| Instrument Chan  | N         | /A         |           | N/A       |
| 2-pie Instrument | 14.59%    |            |           | 14.82%    |
| 2 Sigma Range    | 1245-1347 |            |           | 1731-1944 |
| 3-sigma Range    | 1220-1372 |            |           | 1677-1997 |

#### PARSONS MAIN, INC.

# PARSONS

| (   | CLIENT                                                                                                                                                                                                                                                                                            |                                                                                                             |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|     | WSTRUMENT: PHOSWICH #2<br>5/N: PR 155183 / 119 815                                                                                                                                                                                                                                                | HV: 0.75<br>BATTERY: OK                                                                                     |
|     | BACKGROUND (X/B)<br>TIME: 1140<br>DATE: 615/01                                                                                                                                                                                                                                                    | SOURCE TYPE: Th-230<br>TIME: 12:00 PM S/N: 1841-94 DWS-9<br>DATE: 6/5/01                                    |
| (î. | $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                              |                                                                                                             |
|     | Avg $(\chi) = 0.73$<br>$\sigma(\chi) = 0.85$<br>Avg =<br>$\sigma(\chi) = 0.85$<br>Avg =<br>$\sigma(\chi) = 0.85$                                                                                                                                                                                  | 1296.07<br>36.0 20=72.0                                                                                     |
| (   | $ \begin{array}{rcl}     & (B) = & 13.85 \\     & Source & Type: Tc-99 \\     & Time: 12:30PM & S/N: 1845-94 DNS-9 \\     & Date: 6/5/01 \\     & 1787 & 6 & 1918 & 1, 1 \\     & 2 & 1754 & 7 & 1784 & 12 \\     & 3 & 1904 & 8 & 1819 & 13 \\     & 4 & 1865 & 9 & 1837 & 14 \\   \end{array} $ | 8 topped 1340<br>9 recture 1620<br>1823 $Aug = 1837.13$<br>1831 $G = 42.9$<br>804 $20 = 85.8$<br>817<br>804 |

#### PARSONS MAIN, INC.

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PARSONS

| SUBJECT_DAILY FUNCTION CHECKS                                                                                                                           | _ JOB NO<br>_ BY_JRH<br>_ CKD | SHEET. 3 OF.35<br>DATE 600001<br>REVISION |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------|
| NSTRUMENT: PHOSNICHHZ BATTER<br>S/N: PK 155183/119815 HV:                                                                                               | ex: OK<br>0.75 kV             |                                           |
| TIME 04<br>BAUKGROUND (x/B) midday (DRB<br>Some Economy 2 2/189 3 1/195 4 1/182 4 Jult 5 2/205 Avg = 1.2/196.2                                          | 230<br>J                      |                                           |
| 80URCE TYPE: Th-230<br>5/N·1841-94<br>1 1298 206 Midday : 1254 6<br>2 1271 126 Evening : 1298 @<br>3 1332<br>4 1278<br>5 1251 pulc<br>Aug = 1030.4 1286 | TIME: 0845                    | -                                         |
| SOURCE TYPE: TE-99<br>S/N: 1845-94<br>I 1831 (PC) Midday: 18/0<br>2 1841 Bre Evening: 1318<br>3 1763<br>4 1757<br>5 1786<br>Avg: 1795.60                | TIME: 0855                    | -                                         |

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119815 15983

| DATE: 6/7/01                              | PAGE 4 of 35 |            |  |  |
|-------------------------------------------|--------------|------------|--|--|
| Source                                    | Th-230       | Tc-99      |  |  |
| Calibration Date                          | Alpha Beta   | Alpha Beta |  |  |
| Out of Cal Date                           | 11/29/2001   | 6/4/2000   |  |  |
| Serial Number                             | 119815       | 119815     |  |  |
| Source emission rate                      | 8880         | 11100      |  |  |
|                                           | N/A          | N/A        |  |  |
| High Voltage                              | 0.75 K       | 0          |  |  |
| Battery Check                             | oK           |            |  |  |
| Source Check Reading (1)                  | 1275         | 1825       |  |  |
| Source Check Reading (2)                  | 1174         | 1842       |  |  |
| Source Check Reading (3)                  | 1270         | 1794       |  |  |
| Source Check Reading (4)                  | 1270         | 1789       |  |  |
| Source Check Reading (5)                  | 1276         | 1900       |  |  |
| Source Check Reading (AVERAGE)            | 1289         |            |  |  |
|                                           |              |            |  |  |
| Direct Background reading (1)             | 1            | 199        |  |  |
| Direct Background reading (2)             | 1            | 188        |  |  |
| Direct Background reading (3)             | Z            | 208        |  |  |
| Direct Background reading (4)             | 3            | 192        |  |  |
| Direct Background reading (5)             | /            | 185        |  |  |
| Direct Background reading (AVERAGE)       | 1.6          | 194.4      |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 14.49%       | 15.4%      |  |  |
| MID-DAY SOURCE READING                    | 1302         | 1775       |  |  |
| MID-DAY BACKGROUND READING                | Z            | 201        |  |  |
| EVENING SOURCE READING                    | 1251         | 1708       |  |  |
| EVENING BACKGROUND READING                | 3            | 213        |  |  |
| Morning check performed by                | DR6 0830     |            |  |  |
| Mid-day check performed by                | DRG 1245     | -          |  |  |
| Afternoon check performed by              | DRG Roa      |            |  |  |

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| DATE: 4 (6101                             | PAGE 5 of 35 |        |          |      |
|-------------------------------------------|--------------|--------|----------|------|
| Source                                    | Th-230       |        | Тс       | -99  |
|                                           | Alpha        | Beta   | Alpha    | Beta |
| Calibration Date                          | 5/30/        | 2001   | 6/4/1999 |      |
| Out of Cal Date                           | 11/29        | /2001  | 6/4/2000 |      |
| Source emission rate                      | 88           | 80     | 119      | 015  |
|                                           | N            | A      | N        | /Δ   |
| High Voltage                              | 07           | r I    | 0.75     | 0.75 |
| Battery Check                             | 04           |        | OK       | 014  |
| Source Check Reading (1)                  | 1189         | /      | 1 /      |      |
| Source Check Reading (2)                  | 1246         |        |          |      |
| Source Check Reading (3)                  | 1278         | N.     | N.       | Y    |
| Source Check Reading (4)                  | 1198         | 1      | Y        | 4    |
| Source Check Reading (5)                  | 1237         | 1      | /        | /    |
| Source Check Reading (AVERAGE)            | 1229.6       | /      | V        | /    |
|                                           |              |        |          |      |
| Direct Background reading (1) 0720        | × 3          |        | P 197    | 7    |
| Direct Background reading (2)             | 3            |        | 220      | 1    |
| Direct Background reading (3)             | 3            |        | 190      |      |
| Direct Background reading (4)             | 5            | 1 redo | 200      | )    |
| Direct Background reading (5)             | 2            |        | 186      |      |
| Direct Background reading (AVERAGE)       | 2.4          |        | 200.4    |      |
| Efficiency = (CPM-Background) / DPM * 100 | NA           |        | MA       |      |
| MID-DAY SOURCE READING                    | 1251         |        |          | 1794 |
| MID-DAY BACKGROUND READING                | 2            |        | 14       | ,2   |
| EVENING SOURCE READING                    | NA           |        |          | NA   |
| EVENING BACKGROUND READING                | 0            |        | 20       | 7    |
| Morning check performed by                | J            | 44     |          |      |
| Mid-day check performed by                | DA           | 6 1245 |          |      |
| Afternoon check performed by              | AK           | K      |          |      |

# A/B Phoswich Serial Number 119803/166008-VIM

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| DATE: ( ( ) (                             |            | PAGE 6 of 35 |  |
|-------------------------------------------|------------|--------------|--|
| Source                                    | Th-230     | Tc-99        |  |
|                                           | Alpha Bet  | a Alpha Beta |  |
| Calibration Date                          | 5/30/2001  | 6/4/1999     |  |
| Out of Cal Date                           | 11/29/2001 | 6/4/2000     |  |
| Serial Number                             | 119815     | 119815       |  |
| Instrument Channel                        | N/A        | N/A          |  |
|                                           | 015        | 0.75 0.25    |  |
| High Voltage                              | 0,43       | 0.13 0.15    |  |
| Battery Check                             | 04         | OK OF        |  |
| Source Check Reading (1)                  | /239       | 1837         |  |
| Source Check Reading (2)                  | 1217       | 1762         |  |
| Source Check Reading (3)                  | 1307 4     | 1828         |  |
| Source Check Reading (4)                  | 1236       | 1859         |  |
| Source Check Reading (5)                  | 1233       | 1774         |  |
| Source Check Reading (AVERAGE)            | 1246       | 1812         |  |
|                                           |            |              |  |
| Direct Background reading (1)             | 2          | 196          |  |
| Direct Background reading (2)             | O          | 188          |  |
| Direct Background reading (3)             | 2          | 194          |  |
| Direct Background reading (4)             | 3          | 207          |  |
| Direct Background reading (5)             | L          | 195          |  |
| Direct Background reading (AVERAGE)       | 1.0        | 196          |  |
| Efficiency = (CPM-Background) / DPM * 100 | 147.       | 14.6%        |  |
| MID-DAY SOURCE READING                    | 1258       | 1843         |  |
| MID-DAY BACKGROUND READING                | 2          | 213          |  |
| EVENING SOURCE READING                    | 1277       | 1772         |  |
| EVENING BACKGROUND READING                | 4          | 208          |  |
| Morning check performed by                | ikit o     | 730          |  |
| Mid-day check performed by                | vert i     | 245          |  |
| Afternoon check performed by              | DRG 1640   |              |  |

11 9815 (155183 A/B Phoswich Serial Number 119803/166008- ۲

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| A/B Phoswich | Serial Number | 119803/166008 | Km |
|--------------|---------------|---------------|----|
|              |               |               |    |

| DATE: G(10/01                             | PAGE 7 of 35 |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |  |
|-------------------------------------------|--------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--|
| Source                                    | Th-2         | 30       | Tc-99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |  |
|                                           | Alpha        | Beta     | Alpha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Beta          |  |
| Calibration Date                          | 5/30/2001    |          | 6/4/1999                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |  |
| Out of Cal Date                           | 11/29/2001   |          | 6/4/2000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |  |
| Serial Number                             | 1198         | 15       | 119815                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |  |
|                                           | 000          | 0        | 11100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |  |
| High Voltage                              | 0.75         | 0.75     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.25          |  |
| Battery Check                             | Ole          |          | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OK            |  |
| Source Check Reading (1)                  | 1242         | /        | 1 /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1836          |  |
| Source Check Reading (2)                  | 1333         | /        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1847          |  |
| Source Check Reading (3)                  | 1205         |          | in the second se | 1821          |  |
| Source Check Reading (4)                  | 1304         | */       | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1750          |  |
| Source Check Reading (5)                  | 1258         | /        | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1844          |  |
| Source Check Reading (AVERAGE)            | 1268         | /        | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 182.0         |  |
|                                           |              |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1             |  |
| Direct Background reading (1)             | <u>a</u> 1   |          | 3 26-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | F             |  |
| Direct Background reading (2)             |              | _        | 196                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1             |  |
| Direct Background reading (3)             | 2            |          | 215                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |  |
| Direct Background reading (4)             | 2            |          | 237                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |  |
| Direct Background reading (5)             | 1            |          | 227                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | .27           |  |
| Direct Background reading (AVERAGE)       | 1.4          |          | 228                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3             |  |
| Efficiency = (CPM-Background) / DPM * 100 | 14.3         | %        | 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3%            |  |
| MID-DAY SOURCE READING                    |              | /        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |  |
| MID-DAY BACKGROUND READING                | R            | it used  | N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | in an sett    |  |
| EVENING SOURCE READING                    | NA -         |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\rightarrow$ |  |
| EVENING BACKGROUND READING                | NA           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\rightarrow$ |  |
| Morning check performed by                |              | Jey      | 0750                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |  |
| Mid-day check performed by                | Not US       | ed itin  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |  |
| Afternoon check performed by              | Not US       | ied Filh |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |  |

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# 119815/155183

### A/B Phoswich Serial Number 119803/166008- W

| DATE: 6/11/01                             | PAGE 8 of 35      |         |          |       |  |  |
|-------------------------------------------|-------------------|---------|----------|-------|--|--|
| Source                                    | Th                | -230    | Тс       | Tc-99 |  |  |
|                                           | Alpha             | Beta    | Alpha    | Beta  |  |  |
| Calibration Date                          | 5/30/2001         |         | 6/4/1999 |       |  |  |
| Out of Cal Date                           | 11/29/2001        |         | 6/4/2000 |       |  |  |
| Serial Number                             | 119               | 9815    | 119815   |       |  |  |
| Source emission rate                      | 88                | 880     | 11100    |       |  |  |
|                                           |                   | 1/A     | 1N       | I/A   |  |  |
| High Voltage                              | (                 | 0.75    |          |       |  |  |
| Battery Check                             |                   | oK      |          |       |  |  |
| Source Check Reading (1)                  | 1179              | /       | /        | 1719  |  |  |
| Source Check Reading (2)                  | 1225              |         | V        | 1779  |  |  |
| Source Check Reading (3)                  | 1273              | R       | X        | 1741  |  |  |
| Source Check Reading (4)                  | 1193              |         |          | 1749  |  |  |
| Source Check Reading (5)                  | 1260              | /       | 1/       | 1805  |  |  |
| Source Check Reading (AVERAGE)            | 1226              |         | /        | 1759  |  |  |
|                                           |                   |         |          | 1     |  |  |
| Direct Background reading (1)             |                   | 3       | 18       | 7     |  |  |
| Direct Background reading (2)             |                   | 1.      | 215      |       |  |  |
| Direct Background reading (3)             |                   | 2       | 201      |       |  |  |
| Direct Background reading (4)             | 1                 | 2       | 191      |       |  |  |
| Direct Background reading (5)             | -                 | 2       | 18       | 189   |  |  |
| Direct Background reading (AVERAGE)       |                   | 2       | 197      |       |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 14%               | e a     | 14% 19   | 700   |  |  |
| MID-DAY SOURCE READING                    | V                 |         | VI       | K     |  |  |
| MID-DAY BACKGROUND READING                | -                 |         | /        |       |  |  |
| EVENING SOURCE READING                    | v                 | in      | Y.       |       |  |  |
| EVENING BACKGROUND READING                |                   |         |          |       |  |  |
| Morning check performed by                |                   | DRG     | Jet "    | 0830  |  |  |
| Mid-day check performed by                | did               | not use | in AM    |       |  |  |
| Afternoon check performed by              | did not use in PM |         |          |       |  |  |
## 119815/155183

| A/B | Phoswich | Serial | Number-119803/166008 KM |
|-----|----------|--------|-------------------------|
|-----|----------|--------|-------------------------|

| DATE:                                     |            | PAGE 9 c     | f 35    |                    |
|-------------------------------------------|------------|--------------|---------|--------------------|
| Source                                    | Th-230     |              | Tc-99   |                    |
|                                           | Alpha Be   | ta Alpha     | Beta    |                    |
| Calibration Date                          | 5/30/2001  | 6.           | 4/1999  |                    |
| Out of Cal Date                           | 11/29/2001 | 6.           | 4/2000  | 4                  |
| Serial Number                             | 119815     | 1            | 19815   | 4                  |
| Source emission rate                      | 8880       |              | N/0     | 4                  |
|                                           | IN/A       |              | IN/A    | -                  |
| High Voltage                              | 0.75       | 0.75         | 0.75    |                    |
| Battery Check                             | 6K         | OK           | 014     |                    |
| Source Check Reading (1)                  | 1279       |              | 1739 i7 | BI Jeff            |
| Source Check Reading (2)                  | 1169       | W            | 1799    |                    |
| Source Check Reading (3)                  | 1189       | $\mathbf{X}$ | 1758    |                    |
| Source Check Reading (4)                  | 1275       |              | 1819    |                    |
| Source Check Reading (5)                  | 1330       |              | 1852    |                    |
| Source Check Reading (AVERAGE)            | 1248.4     |              | 1801.8  | ok                 |
|                                           |            |              |         |                    |
| Direct Background reading (1)             | d i        | P 1          | 241     |                    |
| Direct Background reading (2)             | 2          | 2            | .09     |                    |
| Direct Background reading (3)             | 0          | 1            | 97      |                    |
| Direct Background reading (4)             | 3          | -            | 235     |                    |
| Direct Background reading (5)             | 0          |              | 78      |                    |
| Direct Background reading (AVERAGE)       |            | 2            | 12      |                    |
| Efficiency = (CPM-Background) / DPM * 100 | 14 %       | 1.           | 4.3%    |                    |
| MID-DAY SOURCE READING                    | 1252       | ///          | 1773    | But OK<br>HU: U.T. |
| MID-DAY BACKGROUND READING                | 1          | 234          |         | 1                  |
| EVENING SOURCE READING                    | 1319       |              | - 1839  | But 10K<br>HU:0,75 |
| EVENING BACKGROUND READING                | 7          | 2 221        |         |                    |
| Morning check performed by                | Vicl       | 0745         |         |                    |
| Mid-day check performed by                | DRG        | 1225         |         |                    |
| Afternoon check performed by              | DRG        | 1705         |         |                    |

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| DATE: 6/13/01                             | PA           | GE 10 of 35   |
|-------------------------------------------|--------------|---------------|
| Source                                    | Th-230       | Tc-99         |
|                                           | Alpha Beta   | Alpha Beta    |
| Calibration Date                          | 5/30/2001    | 6/4/1999      |
| Out of Cal Date                           | 11/29/2001   | 6/4/2000      |
| Source emission rate                      | 8880         | 119815        |
| Instrument Channel                        | N/A          | N/A           |
| High Voltage                              | 0.75         |               |
| Battery Check                             | oK           |               |
| Source Check Reading (1)                  | 1279         | 1756          |
| Source Check Reading (2)                  | 1303         | 1735          |
| Source Check Reading (3)                  | 1292         | 1810          |
| Source Check Reading (4)                  | 1296         | 1847          |
| Source Check Reading (5)                  | 1240         | 1798          |
| Source Check Reading (AVERAGE)            | 1282         | 1789          |
|                                           |              |               |
| Direct Background reading (1)             | 2            | 194           |
| Direct Background reading (2)             | Ц            | 189           |
| Direct Background reading (3)             | 1            | 179           |
| Direct Background reading (4)             |              | 196           |
| Direct Background reading (5)             | Ц            | 186           |
| Direct Background reading (AVERAGE)       | 2.4          | 189           |
| Efficiency = (CPM-Background) / DPM * 100 | 14.4 %       | 14.4%         |
| MID-DAY SOURCE READING                    | not used in  | AM            |
| MID-DAY BACKGROUND READING                | NA           | 7             |
| EVENING SOURCE READING                    | not wid in F | em            |
| EVENING BACKGROUND READING                | NA           | $\rightarrow$ |
| Morning check performed by                | JRH 0720     |               |
| Mid-day check performed by                | NA           |               |
| Afternoon check performed by              | NA           |               |

#### 19813 / 15983 A/B Phoswich Serial Number 19803/166008-WA

119815 (155183

+19815 9m" 1-k

A/B Phoswich Serial Number 149803/166008 VA

| DATE: 6/11/01                             |              | PAG     | GE    of | 35     |
|-------------------------------------------|--------------|---------|----------|--------|
| Source                                    | Th-          | 230     | Т        | c-99   |
|                                           | Alpha        | Beta    | Alpha    | Beta   |
| Calibration Date                          | 5/30         | /2001   | 6/4      | /1999  |
| Out of Cal Date                           | 11/29        | 0/2001  | 6/4      | /2000  |
| Serial Number                             | 89           | 1815    | 11       | 9815   |
| Instrument Channel                        | N            | /A      |          | J/A    |
| High Voltage                              | Fint 0.75 kV |         |          |        |
| Battery Check                             | C            | 7K      |          |        |
| Source Check Reading (1)                  | 1194         | 377     | 3        | 1756   |
| Source Check Reading (2)                  | 1244         | Hit Int | 2        | 1714   |
| Source Check Reading (3)                  | 1207         | 375     | 0        | 1799   |
| Source Check Reading (4)                  | 1239         | 395     | 1        | 1746   |
| Source Check Reading (5)                  | 1284         | 411     | 1        | 1796   |
| Source Check Reading (AVERAGE)            | 1231.6       | 394.6   | 1.4      | 1762.2 |
| Direct Background reading (1)             | 9-3          | DJAK 5  | 184      | 4      |
| Direct Background reading (2)             | +4           | DJnk 3  | 16       | 1      |
| Direct Background reading (3)             |              | 3       | 17       | 7      |
| Direct Background reading (4)             |              | 2       | 17       | 3      |
| Direct Background reading (5)             |              | 1       | 16       | 9      |
| Direct Background reading (AVERAGE)       |              | 2.8     | 13       | -6.8   |
| Efficiency = (CPM-Background) / DPM * 100 |              | 14%     | 1        | 4%     |
| MID-DAY SOURCE READING                    | notuse       | d in A  | m        |        |
| MID-DAY BACKGROUND READING                | NA -         |         |          | -7     |
| EVENING SOURCE READING                    | 1261         | 357     | 2        | 1707   |
| EVENING BACKGROUND READING 5:18 , Pom     |              | 2       |          | 204    |
| Morning check performed by                | JMK          |         |          |        |
| Mid-day check performed by                | NA           |         |          |        |
| Afternoon check performed by              | Rom          |         |          |        |

| DATE: 6/19/01                             |         | P/      | AGE 12 | of 35      |
|-------------------------------------------|---------|---------|--------|------------|
| Source                                    | Т       | h-230   | 1      | Tc-99      |
|                                           | Alpha   | Beta    | Alpha  | Beta       |
| Calibration Date                          | 5/3     | 0/2001  | E      | 5/4/1999   |
| Out of Cal Date                           | 11/2    | 29/2001 | 6      | 5/4/2000   |
| Serial Number                             | 11      | 19815   |        | 119815     |
| Instrument Channel                        |         | N/A     | 1      | N/A        |
| High Voltage                              | 0.      | 75 kl   | /      |            |
| Battery Check                             | ok      |         |        |            |
| Source Check Reading (1)                  | 1217    | 351     | NAS    | 1727       |
| Source Check Reading (2) 1258             | 3 4626  | 368     |        | / 1705     |
| Source Check Reading (3)                  | 1227    | 351     | Nr /   | 1706       |
| Source Check Reading (4)                  | 1184    | 357     | 1-/    | 1891       |
| Source Check Reading (5)                  | 1200    | 384     |        | 1743       |
| Source Check Reading (AVERAGE)            | 1217.35 | 362 19  | V      | 1200 17    |
|                                           |         |         |        |            |
| Direct Background reading (1)             |         | 3       | 1      | 92         |
| Direct Background reading (2)             |         | 3       | 1      | 96         |
| Direct Background reading (3)             | 1       |         | 18     | 37         |
| Direct Background reading (4)             | 5       | 5       | 1.     | <i>î</i> 4 |
| Direct Background reading (5)             | 1       |         | 18     | 35         |
| Direct Background reading (AVERAGE)       | 26      | 5=1,6   | 191,2  | 2 5=13,8   |
| Efficiency = (CPM-Background) / DPM * 100 | 14      | %       | 14     | 1%         |
| MID-DAY SOURCE READING                    | 1191    | 335     | 1      | 1756       |
| MID-DAY BACKGROUND READING                | t       | 9       |        | 187        |
| EVENING SOURCE READING                    | 1298    | 368     | 3      | 1716       |
| EVENING BACKGROUND READING                | 180     | 2       | 1      | 180        |
| Morning check performed by                | Rom     | 7:15a   |        |            |
| Mid-day check performed by                | Rom     | 12:26 p |        |            |
| Afternoon check performed by              | 9mK     | 1655hrs |        |            |

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|              |               | 151       | 185183   |
|--------------|---------------|-----------|----------|
| A/B Phoswich | Serial Number | 119803/16 | 6008 VIA |

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| DATE: 6/20/2001                           |          | PA     | GE 13 of | 35    |
|-------------------------------------------|----------|--------|----------|-------|
| Source                                    | Th-230   |        | Tc-99    |       |
|                                           | Alpha    | Beta   | Alpha    | Beta  |
| Calibration Date                          | 5/30/2   | 2001   | 6/4/     | 1999  |
| Serial Number                             | 1108     | 119815 |          | 2000  |
| Source emission rate                      | 888      | 0      | 11       | 100   |
| Instrument Channel                        | N/A      | A      | N        | I/A   |
| High Voltage                              |          | 0.8    | kV       |       |
| Battery Check                             | бк       |        |          |       |
| Source Check Reading (1)                  | 1270     |        | /        | 1712  |
| Source Check Reading (2)                  | 1215     |        | j. t     | 1645  |
| Source Check Reading (3)                  | 1253     |        | Y        | 1615  |
| Source Check Reading (4)                  | 1307     |        |          | 1732  |
| Source Check Reading (5)                  | 1255     | /      |          | 1757  |
| Source Check Reading (AVERAGE)            | 1260     |        |          | 16922 |
|                                           |          |        |          |       |
| Direct Background reading (1)             | Juk Hor  | D      | 196      |       |
| Direct Background reading (2)             | And 204  | 2      | 166      | 0     |
| Direct Background reading (3)             | d 2      |        | B 172    |       |
| Direct Background reading (4)             | 2        |        | 167      |       |
| Direct Background reading (5)             | 2        |        | 193      |       |
| Direct Background reading (AVERAGE)       | 1.4      |        | 178.     | 8     |
| Efficiency = (CPM-Background) / DPM * 100 | 14 %     | -      | 14       | 0/0   |
| MID-DAY SOURCE READING                    | 1248 Jet | 335 em | 1        | 1687  |
| MID-DAY BACKGROUND READING                | 1        | 352    | 193      |       |
| EVENING SOURCE READING                    | 1251     |        | /        | 1695  |
| EVENING BACKGROUND READING                | U        |        | 193      |       |
| Morning check performed by                |          | JRY    | 071      | 0     |
| Mid-day check performed by                |          | ROM    | 12:0     | 5p    |
| Afternoon check performed by              |          | KLK    |          |       |

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| DATE: 5/21/01                             | PAGE 14 of 35 |        |       |        |  |
|-------------------------------------------|---------------|--------|-------|--------|--|
| Source                                    | Th-           | 230    | Tc-99 |        |  |
|                                           | Alpha         | Beta   | Alpha | Beta   |  |
| Calibration Date                          | 5/30/         | /2001  | 6/4   | /1999  |  |
| Out of Cal Date                           | 11/29         | 9/2001 | 6/4   | /2000  |  |
| Serial Number                             | 119           | 9815   | 11    | 9815   |  |
| Source emission rate                      | 88            | 380    | 1     | 1100   |  |
| Instrument Channel                        | N             | /A     | N/A   |        |  |
| High Voltage                              | 0.75          |        |       |        |  |
| Battery Check                             | 0             | K      |       |        |  |
| Source Check Reading (1)                  | 1152          | 1      | e/    | 1642   |  |
| Source Check Reading (2)                  | i100          |        | y y   | 1737   |  |
| Source Check Reading (3)                  | 1117          |        | /     | 1777   |  |
| Source Check Reading (4)                  | 1136          | - /    | K     | 1821   |  |
| Source Check Reading (5)                  | 1135          | /      |       | 1765   |  |
| Source Check Reading (AVERAGE)            | 1128          | /      |       | 1748.7 |  |
| Direct Reckmannel reading (1)             |               |        | 19    | 3      |  |
| Direct Background reading (1)             |               |        | 1.0   |        |  |
| Direct Background reading (2)             |               | 1      | 20    | 8      |  |
| Direct Background reading (3)             |               | 1      | 184   |        |  |
| Direct Background reading (4)             |               | 1      | 188   |        |  |
| Direct Background reading (5)             |               | 0      | 185   |        |  |
| Direct Background reading (AVERAGE)       | 1             | .4     | 19    | 1      |  |
| Efficiency = (CPM-Background) / DPM * 100 | ];            | 30/0   | 1     | 4%0    |  |
| MID-DAY SOURCE READING                    | 1250          | NA     | NA    | 1840   |  |
| MID-DAY BACKGROUND READING                | 1             | -      | . 23  | 5      |  |
| EVENING SOURCE READING                    | mylar         | change | d     |        |  |
| EVENING BACKGROUND READING                | NA            |        | ->    |        |  |
| Morning check performed by                | KKS           |        |       |        |  |
| Mid-day check performed by                |               | JMK    |       |        |  |
| Afternoon check performed by              |               | NA     |       |        |  |

#### A/B Phoswich Serial Number 119815/155183

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Myler was broken during afternoon reasing - the data collected prior to sive breakinge it ok.

| Project: SEAD-12 | 2          |           |           |           |
|------------------|------------|-----------|-----------|-----------|
|                  |            |           | Page 15of | 75        |
| Instrument Type  |            | A         | /B        |           |
| AKA              |            | phos      | swich     |           |
| Make             |            | Luc       | llum      |           |
| Model            |            | 22        | 224       |           |
| Serial Number    |            | 119       | 815       |           |
| Calibration Date |            | 5/30      | /2001     |           |
| Out of Cal Date  |            | 11/29     | )/2001    |           |
| Probe:           | Alp        | ha        |           | Beta      |
| Make             |            | Luc       | llum      |           |
| Model            |            | 43-       | -1-1      |           |
| Serial Number    |            | PR1       | 55183     |           |
| Calibration Date |            | 5/30/     | 2001      |           |
| Out of Cal Date  |            | 11/29     | /2001     |           |
| Source           | Th-2       | 230       | T         |           |
|                  | Alpha      | Beta      | Alpha     | Beta      |
| Calibration Date | 4/10/2     | 2001      | - 4/1     | 0/2001    |
| Out of Cal Date  | 3/31/2     | 2003      | 3/3       | 1/2003    |
| Serial Number    | 1841       | 1841-94 1 |           | 39-92     |
| Source emission  | 8880 11100 |           | 1100      |           |
| Instrument Chan  | N/.        | A         |           | N/A       |
| 2-pie Instrument | 14.19%     |           |           | 14.47%    |
| 2 Sigma Range    | 1174-1349  |           |           | 1700-1888 |
| 3-sigma Range    | 1131-1393  |           |           | 1654-1935 |

PARSONS MAIN, INC.

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| Ċ, | CLIENT<br>SUBJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | + cheek          | PHOSWICH #/19815 | JOB NO<br>BY<br>CKD    | SHEET 6/27/01<br>DATE 6/27/01<br>REVISION                                                                                                                          |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (  | Th - 23<br>Fc - 99<br>2/2/1<br>2/2/6<br>3/2/6<br>3/296<br>3/307<br>4/233<br>5/240<br>7/273<br>7/273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1273<br>1275<br>1275<br>1275<br>1275<br>1275<br>1275<br>1275<br>1275<br>127 | (0940)<br>(1007) |                  | 2 B/2 2/2 6/1 2 13312/ | B<br>PEKCAROUND<br>183<br>178<br>209<br>197<br>183<br>183<br>198<br>199 (1025)<br>179<br>183<br>183<br>183<br>197<br>197<br>197<br>197<br>197<br>197<br>197<br>197 |

|  | A/B | Phoswich | Serial | Number | 1 | 198 | 15/ | 155 | 18 | 3 |
|--|-----|----------|--------|--------|---|-----|-----|-----|----|---|
|--|-----|----------|--------|--------|---|-----|-----|-----|----|---|

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| DATE: 6/27/01                             | P                | AGE 17 of 35   |  |
|-------------------------------------------|------------------|----------------|--|
| Source                                    | Th-230           | Tc-99          |  |
| Calibration Date                          | Alpha Beta       | Alpha Beta     |  |
| Out of Cal Date                           | 11/29/2001       | 6/4/2000       |  |
| Serial Number                             | 119815           | 119815         |  |
| Source emission rate                      | 8880             | 11100          |  |
| Instrument Channel                        | N/A              | N/A            |  |
| High Voltage                              | 0                | 75             |  |
| Battery Check                             | ØK               |                |  |
| Source Check Reading (1)                  |                  |                |  |
| Source Check Reading (2)                  |                  |                |  |
| Source Check Reading (3)                  |                  |                |  |
| Source Check Reading (4)                  |                  |                |  |
| Source Check Reading (5)                  | Vin Vin          | High for theck |  |
| Source Check Reading (AVERAGE)            |                  | den in         |  |
| Direct Background reading (1)             |                  | MORNing        |  |
| Direct Background reading (2)             |                  |                |  |
| Direct Background reading (3)             |                  |                |  |
| Direct Background reading (4)             |                  |                |  |
| Direct Background reading (5)             |                  |                |  |
| Direct Background reading (AVERAGE)       |                  |                |  |
| Efficiency = (CPM-Background) / DPM * 100 | NA               | NA             |  |
| MID-DAY SOURCE READING                    | (1672 NA         | NA 138         |  |
| MID-DAY BACKGROUND READING                |                  | 183            |  |
| EVENING SOURCE READING                    | 1283 NA          | NA 1791        |  |
| EVENING BACKGROUND READING                | 1                | 185            |  |
| Morning check performed by                | initial fx check | k done         |  |
| Mid-day check performed by                | JK               |                |  |
| Afternoon check performed by              | JE               |                |  |

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| DATE: 0/22 01                              | PAGE 18 of 35 |      |          |      |
|--------------------------------------------|---------------|------|----------|------|
| Source                                     | Th-230        |      | Тс       | -99  |
|                                            | Alpha         | Beta | Alpha    | Beta |
| Calibration Date                           | 5/30/2001     |      | 6/4/1999 |      |
| Out of Cal Date                            | 11/29/2001    |      | 6/4/     | 2000 |
| Serial Number                              | 119815        |      | 119      | 1815 |
| Source emission rate                       | 8880          |      | 11100    |      |
|                                            | N/A           |      | IN       | /A   |
| High Voltage                               | 0.            | 75 W |          |      |
| Battery Check                              | 01            | ke   |          |      |
| Source Check Reading (1)                   | 1290          |      | /        | 1845 |
| Source Check Reading (2)                   | 1276          |      | x W      | 1741 |
| Source Check Reading (3)                   | 1250          |      | Y        | 1619 |
| Source Check Reading (4)                   | 1292          |      |          | 1733 |
| Source Check Reading (5)                   | 1288          |      |          | 1850 |
| Source Check Reading (AVERAGE)             | 1279 /        |      |          | 1798 |
|                                            |               |      |          |      |
| Direct Background reading (1)              | 0             |      | 206      |      |
| Direct Background reading (2)              | 1             |      | 184      |      |
| Direct Background reading (3)              | 3             |      | ירו      | 7    |
| Direct Background reading (4)              | 12            |      | 194      |      |
| Direct Background reading (5)              | 2             |      | 175      |      |
| Direct Background reading (AVERAGE)        | 1.6           |      | (8-      | 7    |
| Efficiency = (CPM-Background) / DPM * 100  | 14%           |      | 15%      |      |
| MID-DAY SOURCE READING                     | 1229 3        | 33   | And      | 1784 |
| MID-DAY BACKGROUND READING                 | 2             |      | 213      |      |
| EVENING SOURCE READING                     | 1294          | NA   | NA       | 1815 |
| EVENING BACKGROUND READING                 | 1             |      | 19       | 2    |
| Morning check performed by Survey 72°F     | JRH I         | )712 |          |      |
| Mid-day check performed by Home Sunny 56'F | F JPAK 1214   |      |          |      |
| Afternoon check performed by               | JMK 1730      |      |          |      |

#### A/B Phoswich Serial Number 119815/155183

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| DATE: 6 29 61                             |        | PAGE 19 of 35 |             |        |  |
|-------------------------------------------|--------|---------------|-------------|--------|--|
| Source                                    | Th-2   | Th-230        |             | 99     |  |
|                                           | Alpha  | Beta          | Alpha       | Beta   |  |
| Calibration Date                          | 5/30/2 | 5/30/2001     |             | 999    |  |
| Out of Cal Date                           | 11/29/ | 11/29/2001    |             | 000    |  |
| Serial Number                             | 1198   | 119815        |             | 815    |  |
| Source emission rate                      | 888    | 8880          |             | 00     |  |
| Instrument Channel                        | N/.    | A             | I N/        | A      |  |
| High Voltage                              |        | 1.7 K         | J           |        |  |
| Battery Check                             |        | OK            | 71 /1       |        |  |
| Source Check Reading (1)                  | 1242   | /             | /           | 1836   |  |
| Source Check Reading (2)                  | 1246   |               | /           | 1838   |  |
| Source Check Reading (3)                  | 1313   |               |             | 1755   |  |
| Source Check Reading (4)                  | 1188   | A             | /p          | 1904   |  |
| Source Check Reading (5)                  | 1280   | / .           |             | 1886   |  |
| Source Check Reading (AVERAGE)            | 1254   | /             |             | 1842   |  |
|                                           |        |               |             |        |  |
| Direct Background reading (1)             | 3      |               | 184         |        |  |
| Direct Background reading (2)             | 3      | >             | 201         | _      |  |
| Direct Background reading (3)             | 1      |               | 173         |        |  |
| Direct Background reading (4)             | 1      | 2             | 175         |        |  |
| Direct Background reading (5)             | 2      | 2             | 208         |        |  |
| Direct Background reading (AVERAGE)       | 2      | .2            | 188         | -      |  |
| Efficiency = (CPM-Background) / DPM * 100 | 14     | 470           | 15%         |        |  |
| MID-DAY SOURCE READING                    | 1291   |               |             | 1805   |  |
| MID-DAY BACKGROUND READING                | 2      |               | 206         | ,      |  |
| EVENING SOURCE READING                    | 1300   | NA            | MA          | 1752   |  |
| EVENING BACKGROUND READING                | 3      |               | 195         |        |  |
| Morning check performed by                | AML DT | 100 00.       | ercust 700F |        |  |
| Mid-day check performed by                | JMKI   | 121 P/        | c 80°1      | = HUND |  |
| Afternoon check performed by              | JK 1   | 529           | 80° F       | ц      |  |

#### A/B Phoswich Serial Number 119815/155183

| DATE: 7/9/01                              | PAGE 20 of 35 |         |          |         |
|-------------------------------------------|---------------|---------|----------|---------|
| Source                                    | Th-230        |         | Tc-99    |         |
| Collibration Data                         | Alpha         | Beta    | Alpha    | Beta    |
| Out of Cal Date                           | 5/30/2001     |         | 6/4/1999 |         |
| Serial Number                             | 119815        |         | 119815   |         |
| Source emission rate                      | 888           | 30      | 11100    |         |
| Instrument Channel                        | N/.           | A       | N        | I/A     |
| High Voltage                              | 0.75          |         |          |         |
| Battery Check                             | ok            |         |          |         |
| Source Check Reading (1)                  | 1286          |         |          | 1794    |
| Source Check Reading (2)                  | 1327          | 1       | /        | 1883    |
| Source Check Reading (3)                  | 1252          | N       | /        | 1803    |
| Source Check Reading (4)                  | 1280          |         |          | 1855    |
| Source Check Reading (5)                  | 1299          |         |          | 1749    |
| Source Check Reading (AVERAGE)            | 1288.8        | /       |          | 1816.8  |
|                                           |               |         |          |         |
| Direct Background reading (1)             | X 3           | 3       | 3 213    | 5       |
| Direct Background reading (2)             | 2 217         |         | -        |         |
| Direct Background reading (3)             | 5             |         | . 187    |         |
| Direct Background reading (4)             | 3             |         | 204      |         |
| Direct Background reading (5)             |               | 2       | 187      | 2       |
| Direct Background reading (AVERAGE)       | 3             | -       | 201      |         |
| Efficiency = (CPM-Background) / DPM * 100 | 14.5          | %       | 14.0     | o °[.   |
| MID-DAY SOURCE READING                    | 1260          |         |          | 1876    |
| MID-DAY BACKGROUND READING                | Ч             |         | 19.      | 3       |
| EVENING SOURCE READING                    | 1215          |         |          | 1287    |
| EVENING BACKGROUND READING                | 3             | 5       | 203      | 5       |
| Morning check performed by 70°F summy     | JRH           | 0725    |          |         |
| Mid-day check performed by                | JRH           | 1155    |          |         |
| Afternoon check performed by 70°F         | Anc           | 1745    |          |         |
| Better                                    | es changed    | after m | idday ch | eck-JNH |

#### A/B Phoswich Serial Number 119815/155183

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| DATE: 7 holo 1                                                                                                 | PAGE 21 of 35     |                    |  |  |
|----------------------------------------------------------------------------------------------------------------|-------------------|--------------------|--|--|
| Source                                                                                                         | Th-230            | Tc-99              |  |  |
|                                                                                                                | Alpha Beta        | Alpha Beta         |  |  |
| Calibration Date                                                                                               | 5/30/2001         | 6/4/1999           |  |  |
| Out of Cal Date                                                                                                | 11/29/2001        | 6/4/2000           |  |  |
| Serial Number                                                                                                  | 119815            | 119815             |  |  |
| Source emission rate                                                                                           | 8880              | 11100              |  |  |
| Instrument Channel                                                                                             | N/A               | N/A                |  |  |
| High Voltage                                                                                                   | 0.75              |                    |  |  |
| Battery Check                                                                                                  | ok                |                    |  |  |
| Source Check Reading (1)                                                                                       | 1247              | 1941               |  |  |
| Source Check Reading (2)                                                                                       | 1365              | 1852               |  |  |
| Source Check Reading (3)                                                                                       | 1272              | 1836               |  |  |
| Source Check Reading (4)                                                                                       | 1302 4            | 184/               |  |  |
| Source Check Reading (5)                                                                                       | 1296              | 1902               |  |  |
| Source Check Reading (AVERAGE)                                                                                 | 1296              | 1874               |  |  |
| Land and an and the second | the second second |                    |  |  |
| Direct Background reading (1)                                                                                  | 274/1             | /                  |  |  |
| Direct Background reading (2)                                                                                  | (87/3             |                    |  |  |
| Direct Background reading (3)                                                                                  | 178/4             | 44                 |  |  |
| Direct Background reading (4)                                                                                  | 209/2             | 7                  |  |  |
| Direct Background reading (5)                                                                                  | 189/7             |                    |  |  |
| Direct Background reading (AVERAGE)                                                                            | 207/3.4           | /                  |  |  |
| Efficiency = (CPM-Background) / DPM * 100                                                                      | 2 12,30614        | 6 B 15 %           |  |  |
| MID-DAY SOURCE READING                                                                                         | 1262              | 1853               |  |  |
| MID-DAY BACKGROUND READING                                                                                     | 2/216             |                    |  |  |
| EVENING SOURCE READING                                                                                         | 1353              | 1732               |  |  |
| EVENING BACKGROUND READING                                                                                     | 3/187             | NA                 |  |  |
| Morning check performed by                                                                                     | Rom 07:03a        | 70° overcast/humid |  |  |
| Mid-day check performed by                                                                                     | JRH 1215          |                    |  |  |
| Afternoon check performed by                                                                                   | JEH 1735          |                    |  |  |

#### A/B Phoswich Serial Number 119815/155183

| DATE: 7/11/61                             | PAGE 3 f of 3 K      |            |  |  |
|-------------------------------------------|----------------------|------------|--|--|
| Source                                    | Th-230 Tc-99         |            |  |  |
|                                           | Alpha Beta           | Alpha Beta |  |  |
| Calibration Date                          | 5/30/2001            | 6/4/1999   |  |  |
| Out of Cal Date                           | 11/29/2001           | 6/4/2000   |  |  |
| Serial Number                             | 119815               | 119815     |  |  |
| Source emission rate                      | 8880                 | 11100      |  |  |
|                                           | N/A                  | N/A        |  |  |
| High Voltage                              | 0.75                 |            |  |  |
| Battery Check                             | OIL                  | 1          |  |  |
| Source Check Reading (1)                  | 1254                 | 1 1890     |  |  |
| Source Check Reading (2)                  | 1254                 | 1793       |  |  |
| Source Check Reading (3)                  | 1297                 | 1789       |  |  |
| Source Check Reading (4)                  | 1278 /               | 1791       |  |  |
| Source Check Reading (5)                  | 1328 /               | 1785       |  |  |
| Source Check Reading (AVERAGE)            | 1282 /               | 1 1810     |  |  |
|                                           |                      |            |  |  |
| Direct Background reading (1)             | 5                    | 214        |  |  |
| Direct Background reading (2)             | 2                    | 194        |  |  |
| Direct Background reading (3)             | 5                    | 183        |  |  |
| Direct Background reading (4)             | 3                    | 200        |  |  |
| Direct Background reading (5)             | 5                    | 208        |  |  |
| Direct Background reading (AVERAGE)       | 4                    | 200        |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 1470                 | 1570       |  |  |
| MID-DAY SOURCE READING                    | 1328                 | 1884       |  |  |
| MID-DAY BACKGROUND READING                | 7 234                |            |  |  |
| EVENING SOURCE READING                    | 3312                 | 1841       |  |  |
| EVENING BACKGROUND READING                | 2 226                |            |  |  |
| Morning check performed by AML 0715       | 10 LOUISM SUMMY 70°F |            |  |  |
| Mid-day check performed by                | JRH 1205 Cloudy      |            |  |  |
| Afternoon check performed by              | JRH 1430             |            |  |  |

#### A/B Phoswich Serial Number 119815/155183

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| VB Phoswich Serial N | umber 1198 | 15/155183 |
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| DATE: 7/12/01                             |                      | PAGE 23 of 35         |  |  |  |
|-------------------------------------------|----------------------|-----------------------|--|--|--|
| Source                                    | Th-230               | Tc-99                 |  |  |  |
|                                           | Alpha                | Beta Alpha Beta       |  |  |  |
| Calibration Date                          | 5/30/2001            | 6/4/1999              |  |  |  |
| Out of Cal Date                           | 11/29/2001           | 6/4/2000              |  |  |  |
| Serial Number                             | 119815               | 119815                |  |  |  |
|                                           | N/A                  | N/A                   |  |  |  |
| High Voltage                              | 0.4                  | KV .                  |  |  |  |
| Battery Check                             | OK                   |                       |  |  |  |
| Source Check Reading (1)                  | 1259                 | 1842                  |  |  |  |
| Source Check Reading (2)                  | 1309                 | 1567                  |  |  |  |
| Source Check Reading (3)                  | 1270 4               | 1571                  |  |  |  |
| Source Check Reading (4)                  | 1302                 | 1010                  |  |  |  |
| Source Check Reading (5)                  | 1343 /               | 1640                  |  |  |  |
| Source Check Reading (AVERAGE)            | 1297 /               | 1647                  |  |  |  |
|                                           |                      |                       |  |  |  |
| Direct Background reading (1)             | 4                    | 255                   |  |  |  |
| Direct Background reading (2)             | 2                    | 209                   |  |  |  |
| Direct Background reading (3)             | 7                    | 165                   |  |  |  |
| Direct Background reading (4)             | 1                    | 209                   |  |  |  |
| Direct Background reading (5)             | 3                    | 198                   |  |  |  |
| Direct Background reading (AVERAGE)       | 3                    | 207                   |  |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 15%                  | 13%                   |  |  |  |
| MID-DAY SOURCE READING                    | 1298                 | 1874                  |  |  |  |
| MID-DAY BACKGROUND READING                | 4                    | 229                   |  |  |  |
| EVENING SOURCE READING                    | 1184 1               | VA NA 1799            |  |  |  |
| EVENING BACKGROUND READING                | 2                    | 232                   |  |  |  |
| Morning check performed by                | AML GOU              | O cludy conter        |  |  |  |
| Mid-day check performed by                | KLK- 1200 Windy 70°F |                       |  |  |  |
| Afternoon check performed by              | JMK 173              | JMK 1730 WALL of 70°F |  |  |  |

| DATE: -7/13/01                            | PAGE 24 of 35 |             |  |  |
|-------------------------------------------|---------------|-------------|--|--|
| Source                                    | Th-230 Tc-99  |             |  |  |
|                                           | Alpha Beta    | Alpha Beta  |  |  |
| Calibration Date                          | 5/30/2001     | 6/4/1999    |  |  |
| Out of Cal Date                           | 11/29/2001    | 6/4/2000    |  |  |
| Serial Number                             | 119815        | 119815      |  |  |
| Source emission rate                      | 8880          | 11100       |  |  |
| Instrument Channel                        | N/A           | N/A         |  |  |
| High Voltage                              | 0.7 KU        |             |  |  |
| Battery Check                             | OIL           | 1           |  |  |
| Source Check Reading (1)                  | 1213          | / 1876      |  |  |
| Source Check Reading (2)                  | 1272          | 1822        |  |  |
| Source Check Reading (3)                  | 1236 V        | 1867        |  |  |
| Source Check Reading (4)                  | 1243 /        | 1824        |  |  |
| Source Check Reading (5)                  | 1245          | / 1921      |  |  |
| Source Check Reading (AVERAGE)            | 1242          | 1862_       |  |  |
|                                           | 2             | 057         |  |  |
| Direct Background reading (1)             | d             | 257         |  |  |
| Direct Background reading (2)             | 0             | 244         |  |  |
| Direct Background reading (3)             | 5             | 228         |  |  |
| Direct Background reading (4)             | 6             | 201         |  |  |
| Direct Background reading (5)             | 3             | 181         |  |  |
| Direct Background reading (AVERAGE)       | 3             | 186         |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 1470          | 15%         |  |  |
| MID-DAY SOURCE READING                    | 1244          | 1779        |  |  |
| MID-DAY BACKGROUND READING                | 5             | 222         |  |  |
| EVENING SOURCE READING                    | 1304 NA       | NA 1791     |  |  |
| EVENING BACKGROUND READING                | Ч             | 222         |  |  |
| Morning check performed by                | AML 0700 Clou | dy uma 680F |  |  |
| Mid-day check performed by                | KIRLI 1218    |             |  |  |
| Afternoon check performed by              | KIK 1730      |             |  |  |

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| DATE: 7/14/01                             |           | PAGE 25 of 35 |          |               |  |
|-------------------------------------------|-----------|---------------|----------|---------------|--|
| Source                                    | Th-2      | Th-230        |          | c-99          |  |
|                                           | Alpha     | Beta          | Alpha    | Beta          |  |
| Calibration Date                          | 5/30/     | 2001          | 6/4      | 1/1999        |  |
| Out of Cal Date                           | 11/29/    | /2001         | 6/4      | 1/2000        |  |
| Serial Number                             | 119       | 815           | 11       | 19815         |  |
|                                           | 884<br>N/ | 80<br>/A      | N/A      |               |  |
| High Voltage                              | 0.25      | <u> </u>      |          |               |  |
| Battery Check                             | ok        |               |          |               |  |
| Source Check Reading (1)                  | 1271      | 1             | /        | 1748          |  |
| Source Check Reading (2)                  | 1310      |               | W.       | 1829          |  |
| Source Check Reading (3)                  | 1340      |               |          | 1773          |  |
| Source Check Reading (4)                  | 1276      |               |          | 1844          |  |
| Source Check Reading (5)                  | 1250      |               |          | 1837          |  |
| Source Check Reading (AVERAGE)            | 1289      | /             |          | 1806          |  |
|                                           | 1         |               | 0.00     | £.            |  |
| Direct Background reading (1)             | 9         |               | 20       | (             |  |
| Direct Background reading (2)             |           | 3             |          | 0             |  |
| Direct Background reading (3)             | 7         |               | 185      |               |  |
| Direct Background reading (4)             | 2         |               | 20       | 9             |  |
| Direct Background reading (5)             | 3         |               | 199      |               |  |
| Direct Background reading (AVERAGE)       | 3.        | 8             | 199      | -             |  |
| Efficiency = (CPM-Background) / DPM * 100 | i4 °      | 0/0           | 14%      |               |  |
| MID-DAY SOURCE READING                    | 1261      | NA            | NA       | 1865          |  |
| MID-DAY BACKGROUND READING                |           | 7             | 20-      | 7             |  |
| EVENING SOURCE READING                    | not is    | sed in        | pm -     | $\rightarrow$ |  |
| EVENING BACKGROUND READING                | Mot il    | sed in        | AM       |               |  |
| Morning check performed by                | JRU O     | 1705          | coch rai | 4             |  |
| Mid-day check performed by                | KUK 1     | 210           | 68       |               |  |
| Afternoon check performed by              | NA        |               | 1.       |               |  |

| DATE: 715 01                              | PAGE 2 6 of 3 5  |            |  |  |
|-------------------------------------------|------------------|------------|--|--|
| Source                                    | Th-230           | Tc-99      |  |  |
|                                           | Alpha Beta       | Alpha Beta |  |  |
| Calibration Date                          | 5/30/2001        | 6/4/1999   |  |  |
| Out of Cal Date                           | 11/29/2001       | 6/4/2000   |  |  |
| Serial Number                             | 119815           | 119815     |  |  |
| Source emission rate                      | 8880             | 11100      |  |  |
| Instrument Channel                        | N/A              | N/A        |  |  |
| High Voltage                              | 0.7              | KU         |  |  |
| Battery Check                             | OK               |            |  |  |
| Source Check Reading (1)                  | 1263             | 1814       |  |  |
| Source Check Reading (2)                  | 1296             | 1866       |  |  |
| Source Check Reading (3)                  | 1248 1           | 1753       |  |  |
| Source Check Reading (4)                  | 1276 /           | 1902       |  |  |
| Source Check Reading (5)                  | 1220 /           | 1808       |  |  |
| Source Check Reading (AVERAGE)            | 1241             | / /829     |  |  |
| Direct Background reading (1)             | (0               | 194        |  |  |
| Direct Background reading (2)             | 7                | 201        |  |  |
| Direct Background reading (3)             | 10               | 210        |  |  |
| Direct Background reading (4)             | 7                | 212        |  |  |
| Direct Background reading (5)             | 9                | 212        |  |  |
| Direct Background reading (AVERAGE)       | 8                | 206        |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 1470             | 157.       |  |  |
| MID-DAY SOURCE READING                    | 1300             | 0101       |  |  |
| MID-DAY BACKGROUND READING                | 5                | 217        |  |  |
| EVENING SOURCE READING                    | 1365             | 1845       |  |  |
| EVENING BACKGROUND READING                | 5                | 224        |  |  |
| Morning check performed by AML 0715       | Party doudy . 10 | un logof   |  |  |
| Mid-day check performed by                | JRH 1200         |            |  |  |

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#### A/B Phoswich Serial Number 119815/155183

PARSONS ENGINEERING SCIENCE

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AML

Afternoon check performed by

| DATE: JAMES KURFU 7/16/9                  | PAGE 27 of 35 |       |           | 35   |
|-------------------------------------------|---------------|-------|-----------|------|
| Source                                    | Th-230        |       | Tc-99     |      |
|                                           | Alpha         | Beta  | Alpha     | Beta |
| Calibration Date                          | 5/30/         | 2001  | 6/4/      | 1999 |
| Out of Cal Date                           | 11/29         | /2001 | 6/4/      | 2000 |
| Serial Number                             | 119           | 815   | 119       | 9815 |
| Source emission rate                      | 88            | 80    | 11100     |      |
|                                           | N/            |       | N/A       |      |
| High Voltage                              | <u> </u>      | 72 KV |           |      |
| Battery Check                             | C             | K     |           |      |
| Source Check Reading (1)                  | 1307          | 1     | W/        | 1884 |
| Source Check Reading (2)                  | 1277          |       | Y         | 1919 |
| Source Check Reading (3)                  | 1198          | /     | $\bigvee$ | 1840 |
| Source Check Reading (4)                  | 1240          | . /   | $\wedge$  | 1913 |
| Source Check Reading (5)                  | 1279          | /     |           | 1844 |
| Source Check Reading (AVERAGE)            | 1260          | /     |           | 1880 |
| Direct Background reading (1)             | 9             |       | 779       |      |
| Direct Background reading (2)             | 5             |       | 194       |      |
| Direct Background reading (3)             | 3             |       | 182       |      |
| Direct Background reading (4)             | 9             |       | 188       |      |
| Direct Background reading (5)             | 3             |       | 185       |      |
| Direct Background reading (AVERAGE)       | 5.8           |       | 196       |      |
| Efficiency = (CPM-Background) / DPM * 100 | 14.1          | °/c   | 15.2      | 2%.  |
| MID-DAY SOURCE READING                    | 1228          | /     | /         | 1850 |
| MID-DAY BACKGROUND READING                |               | 7     | 21        | 6    |
| EVENING SOURCE READING                    | 1284          |       | /         | 1884 |
| EVENING BACKGROUND READING                | 9             | 2     | 18        | 5    |
| Morning check performed by                | NRY           | 0715  |           |      |
| Mid-day check performed by                | JRH           | 210   |           |      |
| Afternoon check performed by              | LAMC          | 1710  |           |      |

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| DATE: 7/17/01                             | PAGE 28 of 35 |              |  |
|-------------------------------------------|---------------|--------------|--|
| Source                                    | Th-230        | Tc-99        |  |
|                                           | Alpha Beta    | a Alpha Beta |  |
| Calibration Date                          | 5/30/2001     | 6/4/1999     |  |
| Out of Cal Date                           | 11/29/2001    | 6/4/2000     |  |
| Serial Number                             | 119815        | 119815       |  |
| Source emission rate                      | 8880          | 11100        |  |
| Instrument Channel                        | N/A           | N/A          |  |
| High Voltage                              | 10.72 kV      |              |  |
| Battery Check                             | olc           |              |  |
| Source Check Reading (1)                  | 1333          | 1864         |  |
| Source Check Reading (2)                  | 1235          | 1898         |  |
| Source Check Reading (3)                  | 1201          | 1833         |  |
| Source Check Reading (4)                  | 1170          | 1877         |  |
| Source Check Reading (5)                  | 1267          | 1236         |  |
| Source Check Reading (AVERAGE)            | 1241          | 1862         |  |
|                                           |               |              |  |
| Direct Background reading (1)             | 2             | 225          |  |
| Direct Background reading (2)             | Ŧ             | 177          |  |
| Direct Background reading (3)             | 2             | 216          |  |
| Direct Background reading (4)             | 6             | 213          |  |
| Direct Background reading (5)             | 4             | 187          |  |
| Direct Background reading (AVERAGE)       | 4.2           | 204          |  |
| Efficiency = (CPM-Background) / DPM * 100 | 13.9 °/.      | 14.9 °1.     |  |
| MID-DAY SOURCE READING                    | 1286          | 1853         |  |
| MID-DAY BACKGROUND READING                | 5             | 204          |  |
| EVENING SOURCE READING                    | 1329          | 1765         |  |
| EVENING BACKGROUND READING                | 3             | 212          |  |
| Morning check performed by Fairy lund     | 124 0         | 715          |  |
| Mid-day check performed by                | JRY 1         | 200          |  |
| Afternoon check performed by              | Rom 5:07p     |              |  |

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| DATE: 7-18-2001                           | PAGE 29 of 35 |            |  |
|-------------------------------------------|---------------|------------|--|
| Source                                    | Th-230        | Tc-99      |  |
|                                           | Alpha Beta    | Alpha Beta |  |
| Calibration Date                          | 5/30/2001     | 6/4/1999   |  |
| Out of Cal Date                           | 11/29/2001    | 6/4/2000   |  |
| Serial Number                             | 119815        | 119815     |  |
|                                           | N/A           | N/A        |  |
| High Voltage                              | 0.72 KV       |            |  |
| Battery Check                             | OK            |            |  |
| Source Check Reading (1)                  | 5th 1190      | 1826       |  |
| Source Check Reading (2)                  | 1341          | 1854       |  |
| Source Check Reading (3)                  | 1196          | 1840       |  |
| Source Check Reading (4)                  | 1229          | × 1867     |  |
| Source Check Reading (5)                  | 1276          | 1977       |  |
| Source Check Reading (AVERAGE)            | 246.4         | 1712.4     |  |
| Direct Background reading (1)             | ч             | 234        |  |
| Direct Background reading (2)             | 3             | 180        |  |
| Direct Background reading (3)             | ч             | 196        |  |
| Direct Background reading (4)             | 7             | 230        |  |
| Direct Background reading (5)             | 7             | 221        |  |
| Direct Background reading (AVERAGE)       | 5             | 313.5      |  |
| Efficiency = (CPM-Background) / DPM * 100 | 14%           | 14%        |  |
| MID-DAY SOURCE READING                    | 1245          | 1988       |  |
| MID-DAY BACKGROUND READING                | 5             | 221        |  |
| EVENING SOURCE READING                    | not used in   | pm>        |  |
| EVENING BACKGROUND READING                | NA            | NA         |  |
| Morning check performed by JAMES KULLIS   | FOGGY (08°    | 0770       |  |
| Mid-day check performed by AML            | Sunny when    | 730 +      |  |
| Afternoon check performed by              | NAS           |            |  |

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| DATE: 7.22 - 01                           | PAGE 30 of 35 |              |  |  |
|-------------------------------------------|---------------|--------------|--|--|
| Source                                    | Th-230 Tc-99  |              |  |  |
|                                           | Alpha Beta    | a Alpha Beta |  |  |
| Calibration Date                          | 5/30/2001     | 6/4/1999     |  |  |
| Out of Cal Date                           | 11/29/2001    | 6/4/2000     |  |  |
| Serial Number                             | 119815        | 119815       |  |  |
|                                           | N/A           | N/A          |  |  |
| High Voltage                              | O.7KV         |              |  |  |
| Battery Check                             | ok            | ~            |  |  |
| Source Check Reading (1)                  | 1189          | 1777         |  |  |
| Source Check Reading (2)                  | 1250          | 1677         |  |  |
| Source Check Reading (3)                  | 1260 4        | 738          |  |  |
| Source Check Reading (4)                  | 1271          | C T 1815     |  |  |
| Source Check Reading (5)                  | 13.2/         | 1729         |  |  |
| Source Check Reading (AVERAGE)            | 1258          | 1747         |  |  |
|                                           |               |              |  |  |
| Direct Background reading (1)             | 4             | . 191        |  |  |
| Direct Background reading (2)             | 3             | 187          |  |  |
| Direct Background reading (3)             | 8             | 180          |  |  |
| Direct Background reading (4)             | 8             | 194          |  |  |
| Direct Background reading (5)             | 4             | 204          |  |  |
| Direct Background reading (AVERAGE)       | 5.4           | 191          |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 140%          | 14%          |  |  |
| MID-DAY SOURCE READING                    | 1226          | K K 1919     |  |  |
| MID-DAY BACKGROUND READING                | 6             | 190          |  |  |
| EVENING SOURCE READING                    | 465 1306      | 1764         |  |  |
| EVENING BACKGROUND READING                | 7             | 174          |  |  |
| Morning check performed by                | KUK 0930      | )            |  |  |
| Mid-day check performed by                | kics 1218 74  | " Hazy       |  |  |
| Afternoon check performed by              | TNK           |              |  |  |

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| DATE: 7-24-0                                 | PAGE 31 of 35 |                 |  |
|----------------------------------------------|---------------|-----------------|--|
| Source                                       | Th-230        | Tc-99           |  |
|                                              | Alpha E       | Beta Alpha Beta |  |
| Calibration Date                             | 5/30/2001     | 6/4/1999        |  |
| Out of Cal Date                              | 11/29/2001    | 6/4/2000        |  |
| Serial Number                                | 119815        | 119815          |  |
| Source emission rate                         | 8880          | 11100           |  |
|                                              | IN/A          | N/A             |  |
| High Voltage                                 | 0.1           | 72 KV           |  |
| Battery Check                                |               | 014             |  |
| Source Check Reading (1)                     | 1216          | 1869            |  |
| Source Check Reading (2)                     | 1322          | 1803            |  |
| Source Check Reading (3)                     | 12.54         | 1775            |  |
| Source Check Reading (4)                     | 1255          | 1857            |  |
| Source Check Reading (5)                     | 1301          | 1823            |  |
| Source Check Reading (AVERAGE)               | 1269.6        | 1825,4          |  |
| Direct Background reading (1)                | 4             | 239             |  |
| Direct Background reading (2)                | 5             | 215             |  |
| Direct Background reading (3)                | 10            | 242             |  |
| Direct Background reading (4)                | 7             | 229             |  |
| Direct Background reading (5)                | 2             | 1529            |  |
| Direct Background reading (AVERAGE)          | 5.6           | 222.8           |  |
| Efficiency = (CPM-Background) / DPM * 100    | 14.23%        | 14.43%          |  |
| MID-DAY SOURCE READING                       | 1283 >        | 1825            |  |
| MID-DAY BACKGROUND READING                   | 10            | 206             |  |
| EVENING SOURCE READING                       | 1273          |                 |  |
| EVENING BACKGROUND READING                   | 8 210         |                 |  |
| Morning check performed by JAMES KULFIS 0712 | 76° OVER      | BT HUMIN        |  |
| Mid-day check performed by TMK 1200 76°      | HAZE HUMID    |                 |  |
| Afternoon check performed by                 | 78°F 1744 KLK |                 |  |

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#### A/B Phoswich Serial Number 119815/155183

| DATE: 7-25-01                             | PAGE 32 of 35  |              |  |  |
|-------------------------------------------|----------------|--------------|--|--|
| Source                                    | Th-230         | Tc-99        |  |  |
|                                           | Alpha Bet      | a Alpha Beta |  |  |
| Calibration Date                          | 5/30/2001      | 6/4/1999     |  |  |
| Out of Cal Date                           | 11/29/2001     | 6/4/2000     |  |  |
| Serial Number                             | 119815         | 119815       |  |  |
| Source emission rate                      | 8880           | 11100        |  |  |
|                                           | N/A            | N/A          |  |  |
| High Voltage                              | (              | DIZKV        |  |  |
| Battery Check                             |                | OK           |  |  |
| Source Check Reading (1)                  | 1255           | 1815         |  |  |
| Source Check Reading (2)                  | 1254           | 1948         |  |  |
| Source Check Reading (3)                  | 1204           | 1955         |  |  |
| Source Check Reading (4)                  | 1302           | 4 1860       |  |  |
| Source Check Reading (5)                  | 1270           | 1809         |  |  |
| Source Check Reading (AVERAGE)            | 1257           | 1857         |  |  |
| Direct Background reading (1)             | 4              | 183          |  |  |
| Direct Background reading (2)             | 8              | 183          |  |  |
| Direct Background reading (3)             | 16             | 227          |  |  |
| Direct Background reading (4)             | 10             | 197          |  |  |
| Direct Background reading (5)             | 9              | 202          |  |  |
| Direct Background reading (AVERAGE)       | 9.4            | 198.4        |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 14.04%         | 14.94 %      |  |  |
| MID-DAY SOURCE READING                    | X541 1235      | NA 1773      |  |  |
| MID-DAY BACKGROUND READING                | 7              | 202          |  |  |
| EVENING SOURCE READING                    | 1239 NA        | A NA 1729    |  |  |
| EVENING BACKGROUND READING                | 8              | 182          |  |  |
| Morning check performed by JK 0107 75°    | STALLAST HUMID | HAZZ         |  |  |
| Mid-day check performed by JK 1145 76°    | CICAR          |              |  |  |
| Afternoon check performed by JK 1730 78°  | P/C            |              |  |  |

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### A/B Phoswich Serial Number 119815/155183

| DATE: 7-26-01                               | PAGE 33 of 35         |            |  |  |  |
|---------------------------------------------|-----------------------|------------|--|--|--|
| Source                                      | Th-230                | Tc-99      |  |  |  |
|                                             | Alpha Beta            | Alpha Beta |  |  |  |
| Calibration Date                            | 5/30/2001             | 6/4/1999   |  |  |  |
| Out of Cal Date                             | 11/29/2001            | 6/4/2000   |  |  |  |
| Serial Number                               | 119815                | 119815     |  |  |  |
| Source emission rate                        | 000U                  | N/A        |  |  |  |
|                                             |                       |            |  |  |  |
| High Voltage                                | 0.12                  |            |  |  |  |
| Battery Check                               | OK                    | 1          |  |  |  |
| Source Check Reading (1)                    | 1309                  | 1726       |  |  |  |
| Source Check Reading (2)                    | 1226                  | 1862       |  |  |  |
| Source Check Reading (3)                    | 1263                  | 1858       |  |  |  |
| Source Check Reading (4)                    | 1315 /                | 1896       |  |  |  |
| Source Check Reading (5)                    | 1229                  | 1928       |  |  |  |
| Source Check Reading (AVERAGE)              | 1268.4                | 1859       |  |  |  |
| Direct Declargered reading (1)              | T                     | 729        |  |  |  |
| Direct Background reading (1)               |                       | 100        |  |  |  |
| Direct Background reading (2)               | 6                     | 198        |  |  |  |
| Direct Background reading (3)               | 7                     | 207        |  |  |  |
| Direct Background reading (4)               | 4                     | 211        |  |  |  |
| Direct Background reading (5)               | 3                     | 197        |  |  |  |
| Direct Background reading (AVERAGE)         | 4.2                   | 208.4      |  |  |  |
| Efficiency = (CPM-Background) / DPM * 100   | 14.231.               | 14.825%    |  |  |  |
| MID-DAY SOURCE READING                      | 1282 NA               | N4 1853    |  |  |  |
| MID-DAY BACKGROUND READING                  | 4                     | 187        |  |  |  |
| EVENING SOURCE READING                      | 1366 NA               | NA 1840    |  |  |  |
| EVENING BACKGROUND READING                  | 10 219                |            |  |  |  |
| Morning check performed by JAMES KURGE 0711 | . 74° Rain            |            |  |  |  |
| Mid-day check performed by JAmes Koters 120 | 204 730 Partly Cloudy |            |  |  |  |
| Afternoon check performed by CMC 1730       | 30 74° SUNNY          |            |  |  |  |

#### A/B Phoswich Serial Number 119815/155183

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| DATE: 7-27-01                             | PAGE 34 of 35 |          |         |      |
|-------------------------------------------|---------------|----------|---------|------|
| Source                                    | Th-230 Tc-9   |          |         | -99  |
|                                           | Alpha         | Beta     | Alpha   | Beta |
| Calibration Date                          | 5/30/2001     |          | 6/4/    | 1999 |
| Out of Cal Date                           | 11/29/2       | 001      | 6/4/    | 2000 |
| Serial Number                             | 8880          | 5        | 119     | 100  |
| Instrument Channel                        | N/A           |          | N/A     |      |
| High Voltage                              | 0.72          |          |         |      |
| Battery Check                             | Ü             | L        |         |      |
| Source Check Reading (1)                  | 1293          |          | /       | 1876 |
| Source Check Reading (2)                  | 1168          |          | X       | 1925 |
| Source Check Reading (3)                  | 1271          |          | Y       | 1860 |
| Source Check Reading (4)                  | 1209          | /        |         | 1838 |
| Source Check Reading (5)                  | 1309          | /        |         | 1896 |
| Source Check Reading (AVERAGE)            | 1250          |          |         | 1871 |
|                                           |               |          |         |      |
| Direct Background reading (1)             | 8             |          | 181     |      |
| Direct Background reading (2)             | 8             |          | 211     |      |
| Direct Background reading (3)             | 10            |          | 181     | +    |
| Direct Background reading (4)             | 10            |          | 204     |      |
| Direct Background reading (5)             | 12            |          | 184     |      |
| Direct Background reading (AVERAGE)       | 9.6           |          | 192     | 8    |
| Efficiency = (CPM-Background) / DPM * 100 | 13.961        | k        | 15.19   | 5/5  |
| MID-DAY SOURCE READING                    | 1200          | MA       | NA      | 1841 |
| MID-DAY BACKGROUND READING                | íe            |          | 20'     | 9    |
| EVENING SOURCE READING                    | MYLAR         | - PER    | FURATED |      |
| EVENING BACKGROUND READING                | NOT           | USE      | P PM    | JK   |
| Morning check performed by JK 0706 68°F   | Sunny         |          |         |      |
| Mid-day check performed by Rom 1:15p 70°F | Sunny         |          |         |      |
| Afternoon check performed by              | mylar v       | repairea | l       |      |
|                                           | The full of   | apounda  | 0       |      |

#### A/B Phoswich Serial Number 119815/155183

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| DATE: 7-28-01                             | PAGE 35 of 35 |           |              | 35       |  |
|-------------------------------------------|---------------|-----------|--------------|----------|--|
| Source                                    | Th-23         | Th-230    |              | Tc-99    |  |
|                                           | Alpha         | Beta      | Alpha        | Beta     |  |
| Calibration Date                          | 5/30/20       | 5/30/2001 |              | 1999     |  |
| Out of Cal Date                           | 11/29/20      | 001       | 6/4/         | 2000     |  |
| Serial Number                             | 11980         | )3        | 184          | 3-94     |  |
| Source emission rate                      | 8880          | )         | 11100        |          |  |
| Instrument Channel                        | N/A           |           | N            | N/A      |  |
| High Voltage                              |               | 9.72      |              |          |  |
| Battery Check                             |               | ok        |              |          |  |
| Source Check Reading (1)                  | 1242          |           | $\backslash$ | 1856     |  |
| Source Check Reading (2)                  | 1244          | /         |              | 1831     |  |
| Source Check Reading (3)                  | 1224          | ¥.        |              | 1900     |  |
| Source Check Reading (4)                  | 1274          | Y         | Ť            | (94)     |  |
| Source Check Reading (5)                  | 1219          |           |              | 1831     |  |
| Source Check Reading (AVERAGE)            | 1241          | /         | 1            | 1872     |  |
|                                           |               |           |              |          |  |
| Direct Background reading (1)             | 13            |           | 271          |          |  |
| Direct Background reading (2)             | 2             |           | 216          | <b>.</b> |  |
| Direct Background reading (3)             | 9             |           | 202          | 2        |  |
| Direct Background reading (4)             | 6             |           | 21           | 9        |  |
| Direct Background reading (5)             | 6             |           | 194          | 1        |  |
| Direct Background reading (AVERAGE)       | . 7           |           | 22           | 220      |  |
| Efficiency = (CPM-Background) / DPM * 100 |               |           |              |          |  |
| MID-DAY SOURCE READING                    |               |           |              |          |  |
| MID-DAY BACKGROUND READING                |               | 1         | Ect          |          |  |
| EVENING SOURCE READING                    |               |           | 1            |          |  |
| EVENING BACKGROUND READING                |               |           | •            |          |  |
| Morning check performed by                | Rm 8:0        | Sa S-     | nny 67       | 0        |  |
| Mid-day check performed by                | Notuse        | ed in     | p.m.         |          |  |
| Afternoon check performed by              | NA            |           | 1            |          |  |

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| Site: Seneca Arm | ny Depot |           |           |           |
|------------------|----------|-----------|-----------|-----------|
| Project: SEAD-12 | 2        |           |           |           |
| the same         |          |           | Page 1 of | 52        |
| Instrument Type  | No.      | A         | VB        | 1-        |
| AKA              |          | pho       | swich     |           |
| Make             |          | Luc       | dlum      |           |
| Model            |          | 22        | 224       |           |
| Serial Number    |          | VUL - 415 | 800 1198  | 03        |
| Calibration Date |          | 5/30      | /2001     |           |
| Out of Cal Date  |          | 11/29     | 9/2001    |           |
| Probe:           | Alp      | ha        |           | Beta      |
| Make             |          | Luc       | dlum      |           |
| Model            |          | 43-1-1    |           |           |
| Serial Number    |          | PR10      | 66008     |           |
| Calibration Date |          | 5/30      | /2001     |           |
| Out of Cal Date  |          | 11/29     | 9/2001    |           |
| Source           | Th-:     | 230       | 1         | Fc-99     |
|                  | Alpha    | Beta      | Alpha     | Beta      |
| Calibration Date | 4/10/    | 2001      | 4/1       | 0/2001    |
| Out of Cal Date  | 3/31/    | 2003      | 3/3       | 1/2003    |
| Serial Number    | 1841     | 1-94      | 10        | )39-92    |
| Source emission  | 88       | 80        | 1         | 1100      |
| Instrument Chan  | N/       | A         |           | N/A       |
| 2-pie Instrument | 9.21%    |           |           | 10.70%    |
| 2 Sigma Range    | 765-871  | ········  |           | 1283-1444 |
| 3 Sigma Range    | 739-897  |           |           | 1243-1485 |

### PARSONS MAIN, INC.

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| CLIENT SEADIZ<br>SUBJECT (NITIAL FUNCTION CLEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | JO<br>در الم                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | в NO<br>Jey                                                                  | SHEET 2 OF 52<br>DATE 6 05 01<br>REVISION                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| $\begin{array}{rcl} \text{INSTRUMENT} & \text{PHOSW} \\ & & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & $ | $\begin{array}{c c} & & & & \\ 1 & & & \\ 1 & & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 2 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\ 1 & & \\$ | 0.65 KN<br>RY, CK<br>TYPE:<br>.30 S/N:<br>15 01<br>t                         | et<br>Th = 230<br>1841 - 94<br>Aug = 88<br>-29<br>26 = 58                                                                                                 |
| Aug-0/176<br>0-0/13<br>20-0/20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Source<br>Timer 11:50<br>Date: 6/5/01<br>1 1328<br>2 1313<br>3 1383<br>4 1328<br>5 1394<br>6 1374<br>7 1405<br>8 1356                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | $   \begin{array}{cccc}     T_{3}P \\     & & \\                           $ | <ul> <li>TZ-99</li> <li>1039/92</li> <li>44</li> <li>373</li> <li>378</li> <li>443</li> <li>1406</li> <li>1292</li> <li>1364</li> <li>37 26+74</li> </ul> |

PARSONS MAIN, INC.

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PARSONS JOB NO.\_\_\_\_\_\_ SHEET 3\_\_\_\_OF 52\_\_\_ CLIENT\_ SUBJECT DAILY FUNCTION CHECK BY JRH DATE 6/06/01 REVISION INSTRUMENT: PHOSWICH #1 BATTERY : OK S/N: 119803 / PR 166008 HV : BACKGROUND (x/B) TIME: 0900 elevated alpha may be residual pto from phytonwitiplier washout from Mylar break yesterday Redu gave O X Evening 0/167 DRG 1/178 l 2345 0/175 0/160 0/160 TIME : 0905 TYPE: TC-99 SOURCE S/N: 1039-92 Evening 1309 1 1309 PRE 2 1383 1434 4 1449 27 Jielt 5

|   | SOURCE | TYPE : TH-230 | TIME. 0920 |
|---|--------|---------------|------------|
|   |        | 5/N : 1841-94 |            |
| 1 | 831    | Evening 804   | Dei        |
| 2 | 825    | O             |            |
| 3 | 801    |               |            |
| 4 | 783    |               |            |
| 5 | 630    |               |            |
|   |        |               |            |

| DATE: 6/7/01                                   | PAGE 4 of 52 |       |          | 52       |  |
|------------------------------------------------|--------------|-------|----------|----------|--|
| Source                                         | Th-230       |       | Tc-99    |          |  |
|                                                | Alpha        | Beta  | Alpha    | Beta     |  |
| Calibration Date                               | 5/30/2001    |       | 6/4/     | 1999     |  |
| Out of Cal Date                                | 11/29/2001   |       | 6/4/2000 |          |  |
| Serial Number                                  | 1198         | 06    | 184      | 3-94     |  |
| Source emission rate                           | 8880         |       | 11100    |          |  |
| Instrument Channel                             | N/A          |       | N/A      |          |  |
| High Voltage                                   | 0,05         | -     | 65 ICLK  | 0.65     |  |
| Battery Check                                  | Dic          | 1     | NA       | ok       |  |
| Source Check Reading (1)                       | 787          |       |          | 1343     |  |
| Source Check Reading (2)                       | 797          |       |          | 1332     |  |
| Source Check Reading (3)                       | 820          | y     | 34       | 1344     |  |
| Source Check Reading (4)                       | 799          | ¥     | 4        | 1393     |  |
| Source Check Reading (5)                       | 822          | /     | /        | 1308     |  |
| Source Check Reading (AVERAGE)                 | 805          |       |          | 1344 0   |  |
|                                                |              |       |          |          |  |
| Direct Background reading (1)                  | X D          |       | B 18     | 6        |  |
| Direct Background reading (2)                  | 0            |       | 195      |          |  |
| Direct Background reading (3) Redid background | e            | 10    | 18       | 2        |  |
| Direct Background reading (4)                  | r0 1         | 10    | 197      |          |  |
| Direct Background reading (5)                  | 0            |       | 170      | 170      |  |
| Direct Background reading (AVERAGE)            | . (          | 7     | 180      | 0        |  |
| Efficiency = (CPM-Background) / DPM * 100      | 9            | 1%    | 10.4     | 1%       |  |
| MID-DAY SOURCE READING                         |              | USED  |          | TED IN   |  |
| MID-DAY BACKGROUND READING                     | Nor          | IN AM | No       | T AM     |  |
| EVENING SOURCE READING                         | BIL ok.      | /     | /        | (287 eie |  |
| EVENING BACKGROUND READING                     |              | 3     | JELT +S  | 72 177   |  |
| Morning check performed by                     |              | JRY   | 0900     |          |  |
| Mid-day check performed by                     | NA           |       |          |          |  |
| Afternoon check performed by                   | JR4 1815     |       |          |          |  |

A/B Phoswich Serial Number 119803/166008

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| DATE: U/& OI                              |            | PA                  | GE 5 of  | 52    |  |
|-------------------------------------------|------------|---------------------|----------|-------|--|
| Source                                    | Th-2:      | 30                  | T        | c-99  |  |
|                                           | Alpha      | Beta                | Alpha    | Beta  |  |
| Calibration Date                          | 5/30/2     | 001                 | 6/4/1999 |       |  |
| Out of Cal Date                           | 11/29/2    | 11/29/2001 6/4/2000 |          | /2000 |  |
| Serial Number                             | 1198       | 119806 1843-94      |          | 43-94 |  |
| Source emission rate                      | 888        | 0                   | 11100    |       |  |
| Instrument Channel                        | N/A        | 1                   | N/A      |       |  |
| High Voltage                              | 0.45       | 0.                  | 65       | 0.65  |  |
| Battery Check                             | Ole        |                     | ole      | ok    |  |
| Source Check Reading (1) 76 0             | 735 redu   | 1                   | /        | 1319  |  |
| Source Check Reading (2) 구성               | 0 768      |                     |          | 1382  |  |
| Source Check Reading (3) 78               | 57 791     | Y                   | NY       | 1397  |  |
| Source Check Reading (4)                  | 7.57       | 4                   |          | 1341  |  |
| Source Check Reading (5)                  | 749        |                     |          | 1368  |  |
| Source Check Reading (AVERAGE)            | ungs 765 / |                     | /        | 1361  |  |
|                                           |            |                     |          |       |  |
| Direct Background reading (1) (720        | x O        |                     | P 1:     | 16    |  |
| Direct Background reading (2)             | (          | 10 peda             | 17       | 5     |  |
| Direct Background reading (3)             | 0          | 0 1                 |          | 4     |  |
| Direct Background reading (4)             | l          | 1 / 0 redo          |          | 161   |  |
| Direct Background reading (5)             | 1          | 1/10 seda 192       |          | 12    |  |
| Direct Background reading (AVERAGE)       |            | 0 1736              |          | i,    |  |
| Efficiency = (CPM-Background) / DPM * 100 | 9          | 9% 10.7%            |          | 7%    |  |
| MID-DAY SOURCE READING                    | 800        |                     |          | 1285  |  |
| MID-DAY BACKGROUND READING                | 1          | 1 165               |          | 05    |  |
| EVENING SOURCE READING                    | 763        |                     |          | 1348  |  |
| EVENING BACKGROUND READING                | 1          |                     | ()       | 64    |  |
| Norning check performed by                | JRH        | JRH 0800            |          |       |  |
| Mid-day check performed by                | JRY        | JR-4 1230           |          |       |  |
| Afternoon check performed by              | DRG        | DRG 1800            |          |       |  |

#### A/B Phoswich Serial Number 119803/166008

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| DATE: & 9 LO                              |           | PAGE (n of 52 |              |  |  |
|-------------------------------------------|-----------|---------------|--------------|--|--|
| Source                                    | Th-230    |               | Tc-99        |  |  |
|                                           | Alpha     | Beta Alpha    | Beta         |  |  |
| Calibration Date                          | 5/30/200  | 1             | 6/4/1999     |  |  |
| Out of Cal Date                           | 11/29/200 | 01            | 6/4/2000     |  |  |
| Serial Number                             | 119806    |               | 1843-94      |  |  |
| Source emission rate                      | 8880      |               | 11100        |  |  |
| Instrument Channel                        | N/A       |               | N/A          |  |  |
| High Voltage                              | 0.65      | NA            | NA           |  |  |
| Battery Check                             | ole       | AVI /         | NA           |  |  |
| Source Check Reading (1)                  | 739       |               | 1382         |  |  |
| Source Check Reading (2)                  | 799       | / /           | 1346         |  |  |
| Source Check Reading (3)                  | 831       | i j           | 1361         |  |  |
| Source Check Reading (4)                  | 798       | ¥ 1           | 1359         |  |  |
| Source Check Reading (5)                  | 779 /     |               | 1340         |  |  |
| Source Check Reading (AVERAGE)            | one 789.2 |               | (357.6       |  |  |
| Direct Background reading (1)             | ĺ.        | 2             | 204          |  |  |
| Direct Background reading (2)             | <u> </u>  | [6            | 101          |  |  |
| Direct Background reading (3)             | 0         |               | 166          |  |  |
| Direct Background reading (4)             | 0         |               | 180          |  |  |
| Direct Background reading (5)             | O         |               | 165          |  |  |
| Direct Background reading (AVERAGE)       | , 4       | 1             | 78.8         |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | EX 1 9    | 1% 21         | 5. CHEUK 11% |  |  |

#### A/B Phoswich Serial Number 119803/166008

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(<sup>\*</sup>.

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Efficiency = (CPM-Background) / DPM \* 100

MID-DAY SOURCE READING

EVENING SOURCE READING

Morning check performed by

Mid-day check performed by

Afternoon check performed by

MID-DAY BACKGROUND READING

EVENING BACKGROUND READING

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NA

NA

NA

NA

Repaired

Not used

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~ linch
| Site: Seneca Arm   | ny Depot            |                    |          |           |  |
|--------------------|---------------------|--------------------|----------|-----------|--|
| Project: SEAD-12   | 2                   |                    |          |           |  |
| 12.1               |                     |                    | Deadlaf  | 50        |  |
| In charge of Trans |                     |                    | Page Loi | 20-       |  |
| Instrument Type    |                     | P                  | VD       |           |  |
| ANA                |                     | pho                | SWICH    |           |  |
| Madal              |                     | Luc                |          |           |  |
| Nodel              |                     | 140                | 224      |           |  |
| Serial Number      |                     | 118                | 10004    |           |  |
| Calibration Date   |                     | 5/30               | /2001    |           |  |
| Out of Cal Date    |                     | 11/29/2001         |          |           |  |
| Probe:             | Al                  | Alpha Beta         |          |           |  |
| Make               |                     | Ludlum             |          |           |  |
| Model              |                     | 43-1-1             |          |           |  |
| Serial Number      | PR166008            |                    |          |           |  |
| Calibration Date   |                     | 5/30/2001          |          |           |  |
| Out of Cal Date    |                     | 11/29/2001         |          |           |  |
| Source             | Th                  | -230               |          | Гс-99     |  |
|                    | Alpha               | Beta               | Alpha    | Beta      |  |
| Calibration Date   | 4/10                | /10/2001 4/10/2001 |          | 0/2001    |  |
| Out of Cal Date    | 3/31/2003 3/31/2003 |                    | 31/2003  |           |  |
| Serial Number      | 184                 | 1841-94 1039-92    |          | 039-92    |  |
| Source emission    | 88                  | 380                | 1        | 1100      |  |
| Instrument Chan    | N                   | N/A                |          | N/A       |  |
| 2-pie Instrument   | 9.21%               |                    |          | 10.70%    |  |
| 2 Sigma Range      | 1022-1119           |                    |          | 1442-1566 |  |
| 3 Sigma Range      | 998-1143            |                    |          | 1411-1598 |  |

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| CLIENT | SEAD-12          |                      | JOB NO                  | SHEET BORS                |
|--------|------------------|----------------------|-------------------------|---------------------------|
| SUBJEC | T Phoswich       | #1 119803            | BY                      | DATE \$ 7 9 0             |
| - Tu   | has changed      | at end of last su    | ско                     | REVISION                  |
| Wed    | their: Sunny?"   | warm, 70°f           | ~                       |                           |
|        | Buck ground      |                      | DOURCE                  |                           |
|        | ×                |                      | <u>a</u> [Th-230        | ) $\underline{b}$ (TC-99) |
| ١      | 3                | 181                  | 1058                    | 1496                      |
| Z      | 4                | 194                  | 1026                    | 1469                      |
| 3      | 6                | 170                  | 1041                    | 1498                      |
| ч      | 2                | 183                  | 1045                    | 1448                      |
| 5      | 4                | 150                  | 1066                    | 1483                      |
| صا     | 2                | 197                  | 1067                    | 1563                      |
| 7      | Ч                | 171                  | 1088                    | 1503                      |
| S      | 3                | 173                  | 1069                    | 1527                      |
| 9      | 4                | 171                  | 1116                    | 1493                      |
| 10     | .3               | 55                   | 1073                    | 1524                      |
| 11     | ١                | 180                  | 1110                    | 1467                      |
| 12     | 2                | 165                  | 1072                    | 153                       |
| 13     | 4                | 166                  | 1091                    | 1539                      |
| 14     | 5                | 171                  | 1063                    | 1.530                     |
| 15     | Ö                | 140                  | 1031                    | 149.3                     |
| Ao     | (j. 3)<br>F= 1.7 | Aur = 13             | Aug = 1068              | Aug = 1504                |
| Aria   | = 2== 0-5        | A. 20 = 145-197      | Aug = 20- = 1002 - 1134 | Aux = 20= 1426 -1582      |
| Aur    | -3-=0-8          | Aug - 30 = 132 - 210 | Aug = 30 = 969 - 1167   | Aug- 30- = 1387 - 1521    |

| DATE: 0 10 01                                                                                                    |       | PA     | GE 9 of | 52      |
|------------------------------------------------------------------------------------------------------------------|-------|--------|---------|---------|
| Source                                                                                                           | Th-   | 230    | Te      | c-99    |
| and the second | Alpha | Beta   | Alpha   | Beta    |
| Calibration Date                                                                                                 | 5/30/ | 2001   | 6/4     | /1999   |
| Out of Cal Date                                                                                                  | 11/29 | 806    | 6/4/    | 13-94   |
| Source emission rate                                                                                             | 88    | 80     | 10      | 100     |
| Instrument Channel                                                                                               | N     | /A     | N       | V/A     |
| High Voltage                                                                                                     | 0,65  |        | 0.65    | 0.65    |
| Battery Check                                                                                                    | ok    |        | ok      | OK      |
| Source Check Reading (1)                                                                                         | 797   | . /    | 1 /     | 1316    |
| Source Check Reading (2)                                                                                         | 332_  |        | V       | 1364    |
| Source Check Reading (3)                                                                                         | 771   | V      | ¥.      | 1393    |
| Source Check Reading (4)                                                                                         | 805   | X      |         | 1339    |
| Source Check Reading (5)                                                                                         | 840   |        | /       | 1346    |
| Source Check Reading (AVERAGE)                                                                                   | 809   | /      | /       | 1351.6  |
|                                                                                                                  |       |        |         |         |
| Direct Background reading (1)                                                                                    | X     | 0      | P 17    | 2       |
| Direct Background reading (2)                                                                                    |       | 1      | 181     | 6       |
| Direct Background reading (3)                                                                                    |       | 0      | 15      | 7       |
| Direct Background reading (4)                                                                                    |       | 0      | 179     |         |
| Direct Background reading (5)                                                                                    |       | 1      | 203     |         |
| Direct Background reading (AVERAGE)                                                                              |       | 41     | 17      | 79.4    |
| Efficiency = (CPM-Background) / DPM * 100                                                                        | æ)    | K 9.1% | 17      | 10.6%   |
| MID-DAY SOURCE READING                                                                                           | 807   | /      | /       | 1293    |
| MID-DAY BACKGROUND READING                                                                                       |       | C      | 1       | .77     |
| EVENING SOURCE READING                                                                                           | 831   | /      |         | 129 130 |
| EVENING BACKGROUND READING                                                                                       |       | 0 159  |         | 9       |
| Morning check performed by                                                                                       | JR    | 4 0757 | 0       |         |
| Mid-day check performed by                                                                                       | _ R   | 4 127  | 10      |         |
| Afternoon check performed by                                                                                     | DK    | 6 170  | 0       |         |

# A/B Phoswich Serial Number 119803/166008

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| DATE: 6/11/01                             |          | PA     | GE 10 of | 52   |
|-------------------------------------------|----------|--------|----------|------|
| Source                                    | Th-      | -230   | Тс       | -99  |
|                                           | Alpha    | Beta   | Alpha    | Beta |
| Calibration Date                          | 5/30     | /2001  | 6/4/     | 1999 |
| Out of Cal Date                           | 11/29    | 9/2001 | 6/4/     | 2000 |
| Serial Number                             | 115      | 1806   | 184      | 100  |
|                                           | 8880     |        |          | 100  |
|                                           |          | <      |          |      |
| High Voltage                              | 0.6      |        |          |      |
| Source Check Reading (1)                  | 194      | 1      | 1        | 1345 |
| Source Check Reading (2)                  | 774      | ,/     | W        | 1269 |
| Source Check Reading (3)                  | 830      | NY NY  | V        | 1335 |
| Source Check Reading (4)                  | 777      | /      | 1        | 1319 |
| Source Check Reading (5)                  | 810      |        | /        | 1344 |
| Source Check Reading (AVERAGE)            | 797      | HA     | NA       | 1322 |
|                                           |          |        |          |      |
| Direct Background reading (1)             |          | 0      | 186      |      |
| Direct Background reading (2)             |          | 0      | 179      |      |
| Direct Background reading (3)             |          | 0      | 188      |      |
| Direct Background reading (4)             |          | 1      | 171      |      |
| Direct Background reading (5)             |          | 0      | 190      |      |
| Direct Background reading (AVERAGE)       | · · ·    | 0      | 183      |      |
| Efficiency = (CPM-Background) / DPM * 100 | 8.       | 9%     | 10.3     | %    |
| MID-DAY SOURCE READING                    | 772      | /      | /        | 1330 |
| MID-DAY BACKGROUND READING                |          | 0      | 186      |      |
| EVENING SOURCE READING                    | 799      | /      | /        | 1346 |
| EVENING BACKGROUND READING                |          | 0      | 181      |      |
| Morning check performed by                | DR       | 6 07   | 450      |      |
| Mid-day check performed by                | DR       | 6 123  | 0        |      |
| Afternoon check performed by              | DRG 1715 |        |          |      |

# A/B Phoswich Serial Number 119803/166008

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| DATE: 6/12/01                             |       | PAGE    of 52 |                |       |     |    |
|-------------------------------------------|-------|---------------|----------------|-------|-----|----|
| Source                                    | Th-   | 230           | Tc-99          |       |     |    |
|                                           | Alpha | Beta          | Alpha          | Beta  |     |    |
| Calibration Date                          | 5/30/ | 2001          | 6/4/1999       |       |     |    |
| Out of Cal Date                           | 11/29 | /2001         | 6/4/2000       |       |     |    |
| Serial Number                             | 119   | 806           | 184            | 43-94 |     |    |
| Source emission rate                      | 00    | 80            | 11             | 100   |     |    |
|                                           |       |               | 1              | W/A   |     |    |
| High Voltage                              | 0.65  |               | 0.65           | 0.65  |     |    |
| Battery Check                             | ok    |               | or             | 96    |     |    |
| Source Check Reading (1)                  | 805   | /             |                | 1:28  |     |    |
| Source Check Reading (2)                  | 754   | V             |                | 1349  |     |    |
| Source Check Reading (3)                  | 829   | Y             | .5             | 1364  |     |    |
| Source Check Reading (4)                  | XOG   |               | 4              | 1322  |     |    |
| Source Check Reading (5)                  | 823   | /             |                | 1287  |     |    |
| Source Check Reading (AVERAGE)            | 803   | ul            | 1              | 1330  |     |    |
|                                           |       |               |                |       |     |    |
| Direct Background reading (1)             | X C   | )             | B I            | 87    |     |    |
| Direct Background reading (2)             | 1     | •             | 1              | 81    |     |    |
| Direct Background reading (3)             | 1     |               | 186            |       |     |    |
| Direct Background reading (4)             | 1     | _             | (80            |       |     |    |
| Direct Background reading (5)             | 1     |               | 176            |       |     |    |
| Direct Background reading (AVERAGE)       | - 1   |               | 182            |       |     |    |
| Efficiency = (CPM-Background) / DPM * 100 | 9%    |               | / DPM * 100 9% |       | 10. | 3% |
| MID-DAY SOURCE READING                    | 784   |               |                | 1326  |     |    |
| MID-DAY BACKGROUND READING                |       | 2             | 17             | 7     |     |    |
| EVENING SOURCE READING                    | 792   | /             | /              | 1360  |     |    |
| EVENING BACKGROUND READING                |       | 1             | 160            | >     |     |    |
| Morning check performed by                | ×     | Jey 07        | 45             |       |     |    |
| Mid-day check performed by                | 7     | XR6 12        | 30             |       |     |    |
| Afternoon check performed by              | Ĩ     | )PG 17        | 405            |       |     |    |

# A/B Phoswich Serial Number 119803/166008

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| DATE: 6/13/01                             |                | PA   | GE 12 of | 52                                      |
|-------------------------------------------|----------------|------|----------|-----------------------------------------|
| Source                                    | Th-230         |      | To       | -99                                     |
|                                           | Alpha          | Beta | Alpha    | Beta                                    |
| Calibration Date                          | 5/30/2001      |      | 6/4/     | /1999                                   |
| Out of Cal Date                           | 11/29/2001     |      | 6/4/     | 2000                                    |
| Serial Number                             | 119806         |      | 184      | 13-94                                   |
| Source emission rate                      | 8880           |      | 11       | 100                                     |
|                                           | IN/A           | -    | L        | N/A                                     |
| High Voltage                              | 0.65           |      |          |                                         |
| Battery Check                             | oK             |      |          |                                         |
| Source Check Reading (1)                  | 785            | /    |          | 1400                                    |
| Source Check Reading (2)                  | 796            |      |          | 1400                                    |
| Source Check Reading (3)                  | 762            |      |          | 1374                                    |
| Source Check Reading (4)                  | 834            |      |          | 1399                                    |
| Source Check Reading (5)                  | 761 /          | /    | /        | 1387                                    |
| Source Check Reading (AVERAGE)            | 788 /          |      | /        | 1392                                    |
|                                           |                |      |          |                                         |
| Direct Background reading (1)             | 0              |      | 163      |                                         |
| Direct Background reading (2)             | 1              |      | 182      |                                         |
| Direct Background reading (3)             |                |      | 186      |                                         |
| Direct Background reading (4)             | 0              |      | 177      |                                         |
| Direct Background reading (5)             | 1              |      | 175      |                                         |
| Direct Background reading (AVERAGE)       | 0,1            | 6    | 176.0    |                                         |
| Efficiency = (CPM-Background) / DPM * 100 | 9%             |      | 11       | %                                       |
| MID-DAY SOURCE READING                    | NA ->          | /    |          | $\rightarrow$                           |
| MID-DAY BACKGROUND READING                | NA             |      |          |                                         |
| EVENING SOURCE READING                    | NA             |      |          | $\rightarrow$                           |
| EVENING BACKGROUND READING                | NA             | NA>  |          | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |
| Morning check performed by                | EKMY DRG       | 065  | 5        |                                         |
| Mid-day check performed by                | not used.      | in A | M        |                                         |
| Afternoon check performed by              | not used in PM |      |          |                                         |

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| DATE: 6-18-01                             | PAGE 13 of 52                           |           |          |               |
|-------------------------------------------|-----------------------------------------|-----------|----------|---------------|
| Source                                    | Th                                      | -230      | Tc-99    |               |
|                                           | Alpha                                   | Beta      | Alpha    | Beta          |
| Calibration Date                          | 5/30                                    | /2001     | 6/4/1999 |               |
| Out of Cal Date                           | 11/29/2001                              |           | 6/4/2000 |               |
| Serial Number                             | 119                                     | 9806      | 184      | 3-94          |
| Source emission rate                      | 88                                      | 0000      |          | 100           |
|                                           | N N                                     | N/A       |          | /A            |
| High Voltage                              | 0.                                      | 6         |          |               |
| Battery Check                             | 0                                       | IC        |          |               |
| Source Check Reading (1)                  | 739                                     | 325       | 1        | 1392          |
| Source Check Reading (2)                  | 740                                     | 341       | 0        | 1334          |
| Source Check Reading (3)                  | 719                                     | 335       | 0        | 1376          |
| Source Check Reading (4)                  | 719 719                                 | 397       | 0        | 1375          |
| Source Check Reading (5)                  | 779                                     | 294       | 1        | 1368          |
| Source Check Reading (AVERAGE)            | 740.80                                  | +692338.4 | 0.4      | 1369          |
|                                           |                                         |           | 53.335   |               |
| Direct Background reading (1)             | × 1                                     | B 121     | 1        | /             |
| Direct Background reading (2)             | 1                                       | 166       |          | /             |
| Direct Background reading (3)             | 0                                       | 178       | Y        | 7             |
| Direct Background reading (4)             | 0                                       | 146       | /        |               |
| Direct Background reading (5)             | 1                                       | 160       | /        |               |
| Direct Background reading (AVERAGE)       | 0.6                                     | 164.2     | /        |               |
| Efficiency = (CPM-Background) / DPM * 100 | 8%                                      | 11%       | NA       |               |
| MID-DAY SOURCE READING                    | NA                                      |           |          | ~>            |
| MID-DAY BACKGROUND READING                | NA                                      |           |          | $\rightarrow$ |
| EVENING SOURCE READING                    | NA                                      |           |          | -7            |
| EVENING BACKGROUND READING                | NA ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |           | -7       |               |
| Morning check performed by                | KLK                                     |           |          |               |
| Mid-day check performed by                | notuse                                  | din AM    | 1        |               |
| Afternoon check performed by              | not used in PM                          |           |          |               |

## A/B Phoswich Serial Number 119803/166008

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| DATE: 6-19-2001                           |              | PAGE 14 of 52 |           | 52      |
|-------------------------------------------|--------------|---------------|-----------|---------|
| Source                                    | Th-230 Tc-99 |               |           | c-99    |
|                                           | Alpha        | Beta          | Alpha     | Beta    |
| Calibration Date                          | 5/3          | 0/2001        | 6/4/1999  |         |
| Out of Cal Date                           | 11/2         | 29/2001       | 6/4/2000  |         |
| Serial Number                             | 1            | 19806         | 184       | 43-94   |
| Instrument Channel                        |              | NI/A          | 1         |         |
| High Voltage                              |              | (             | 2.65 KV   | NA      |
| Battery Check                             |              |               | OK        |         |
| Source Check Reading (1)                  | 766          |               | 1 /       | 1348    |
| Source Check Reading (2)                  | 757          |               |           | 1330    |
| Source Check Reading (3)                  | 729          |               |           | 1308    |
| Source Check Reading (4)                  | 802          | NY NY         | X         | 1289    |
| Source Check Reading (5)                  | 771          | 1/            | /         | 1358    |
| Source Check Reading (AVERAGE)            | 765          |               | V         | 1326.6  |
|                                           |              | -             | 1         |         |
| Direct Background reading (1)             | 2            | 174           |           |         |
| Direct Background reading (2)             | 0            | 167           |           | /       |
| Direct Background reading (3)             | 0            | 140           | Ami       | 4       |
| Direct Background reading (4)             |              | 160           |           |         |
| Direct Background reading (5)             | Ð            | 164           | /         |         |
| Direct Background reading (AVERAGE)       | 0.6          | 161           |           |         |
| Efficiency = (CPM-Background) / DPM * 100 | 9%           | 11%           | N         | 1/4     |
| MID-DAY SOURCE READING                    | 716          | Junk          | Int       | 1279    |
| MID-DAY BACKGROUND READING                | 157          |               | 15        | 51      |
|                                           | 764          | Ink           | Int       | 1223-Th |
| EVENING BACKGROUND READING                |              | 67            | 16        | 1 1     |
| Morning check performed by                | JAMES K      | ORFLS Both i  | within 20 |         |
| Mid-day check performed by                | 3.1          | " X WH        | this 30 B |         |
| Afternoon check performed by              | JK           |               |           |         |

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| DATE: 0-20- 01                            | PAGE 15 of 52 |         |          |       |  |
|-------------------------------------------|---------------|---------|----------|-------|--|
| Source                                    | Th            | 1-230   | Т        | Tc-99 |  |
|                                           | Alpha         | Beta    | Alpha    | Beta  |  |
| Calibration Date                          | 5/30          | 0/2001  | 6/4      | /1999 |  |
| Out of Cal Date                           | 11/2          | 9/2001  | 6/4/2000 |       |  |
| Serial Number                             | 11            | 9806    | 184      | 43-94 |  |
| Source emission rate                      | 8             | 0880    | 1        | 1100  |  |
| Instrument Channel                        |               | N/A     |          | N/A   |  |
| High Voltage                              |               | 0.65    | kV.      |       |  |
| Battery Check                             |               | ok      |          |       |  |
| Source Check Reading (1)                  | 800           | 318     | 0        | 1353  |  |
| Source Check Reading (2)                  | 804           | 290     | 1        | 1287  |  |
| Source Check Reading (3)                  | 819           | 311     | 1        | 1339  |  |
| Source Check Reading (4)                  | 825           | 366     | 0        | 1284  |  |
| Source Check Reading (5)                  | 875           | 282     | 1        | 1307  |  |
| Source Check Reading (AVERAGE)            | 825           | 313     | 0,6      | 1314  |  |
|                                           |               |         |          |       |  |
| Direct Background reading (1)             |               | 0       | 169      |       |  |
| Direct Background reading (2)             |               | 0       | [8]      |       |  |
| Direct Background reading (3)             |               | 1       | 176      |       |  |
| Direct Background reading (4)             |               | 1       | 165      |       |  |
| Direct Background reading (5)             |               | 3       | 177      |       |  |
| Direct Background reading (AVERAGE)       | -             | ľ       |          | 6     |  |
| Efficiency = (CPM-Background) / DPM * 100 | 9%            |         | 10%      |       |  |
| MID-DAY SOURCE READING                    | 743           | -       |          | 1350  |  |
| MID-DAY BACKGROUND READING                | 1 195 JWK     |         | 19       | ч     |  |
| EVENING SOURCE READING                    | 768           |         |          | 1351  |  |
| EVENING BACKGROUND READING                | 0 +           | Seg Ank | 18       | 9     |  |
| Morning check performed by                | Rom           | 0710    |          |       |  |
| Mid-day check performed by                | JM            | K 1210  |          |       |  |
| Afternoon check performed by              | JMK           |         |          |       |  |

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# A/B Phoswich Serial Number 119803/166008

765- 371

, 283 - 1444

| DATE: 6/21/01                             |       |          | PA       | GE 16 of       | 52    |
|-------------------------------------------|-------|----------|----------|----------------|-------|
| Source                                    |       | Th-      | 230      | T              | c-99  |
|                                           |       | Alpha    | Beta     | Alpha          | Beta  |
| Calibration Date                          |       | 5/30/    | 2001     | 6/4            | /1999 |
| Out of Cal Date                           |       | 11/29    | /2001    | 6/4            | /2000 |
| Serial Number                             |       | 119803   |          | 184            | 43-94 |
| Source emission rate                      |       | 88       | 80       | 11             | 100   |
|                                           |       | N        | /A       | r r            | N/A   |
| High Voltage                              |       |          | D. 6     | .8KV           |       |
| Battery Check                             |       |          | <u>ن</u> | K              |       |
| Source Check Reading (1)                  | 782   | 722500   | 340      | Jue/           | 1373  |
| Source Check Reading (2)                  | 750   | 715 504  | 302      |                | 1295  |
| Source Check Reading (3)                  | 780   | -780 sut | 315      |                | 1365  |
| Source Check Reading (4)                  | 773   | 699 Sue  | 303      |                | 1310  |
| Source Check Reading (5)                  | 766 * | su766    | 336      |                | 1271  |
| Source Check Reading (AVERAGE)            | 770   | 50-736.4 | 319.2    |                | 1323  |
|                                           |       |          |          | and the second |       |
| Direct Background reading (1)             | -     | C        |          | 15             | 9     |
| Direct Background reading (2)             |       | 2        | -        | 1              | 12    |
| Direct Background reading (3)             |       | i        |          | 1              | 17    |
| Direct Background reading (4)             |       | 3        |          | 17             | 2     |
| Direct Background reading (5)             |       | -        |          | 168            |       |
| Direct Background reading (AVERAGE)       | 3     | · .      | 4        | 17             | 0     |
| Efficiency = (CPM-Background) / DPM * 100 |       | 9        | %        | 11             | 5%    |
| MID-DAY SOURCE READING                    |       | 765      | 320      | 1              | 1329  |
| MID-DAY BACKGROUND READING                |       |          | 0        | 20             | 1     |
| EVENING SOURCE READING                    |       | 176      |          |                | 1413  |
| EVENING BACKGROUND READING                |       | н        |          | 18             | 3     |
| Morning check performed by                |       | JMK      |          | 0710           |       |
| Mid-day check performed by                |       | Dom      | 1        | 2250           |       |

## A/B Phoswich Serial Number 119803/166008

- water stain on Mylar

Afternoon check performed by

JMK

17:35

| Site: Seneca Arm | ny Depot        |                     |           |           |
|------------------|-----------------|---------------------|-----------|-----------|
| Project: SEAD-12 | 2               | _                   |           |           |
|                  |                 |                     | Page 17of | 52        |
| Instrument Type  |                 | A                   | VB        | 2.8-      |
| AKA              |                 | pho                 | swich     |           |
| Make             |                 | Luc                 | dlum      |           |
| Model            |                 | 22                  | 224       |           |
| Serial Number    |                 | 119                 | 9803      |           |
| Calibration Date |                 | 5/30                | /2001     |           |
| Out of Cal Date  |                 | 11/29               | 9/2001    |           |
| Probe:           | Al              | oha                 |           | Beta      |
| Make             |                 | Luc                 | dlum      |           |
| Model            |                 | 43-1-1              |           |           |
| Serial Number    |                 | PR166008            |           |           |
| Calibration Date |                 | 5/30/2001           |           |           |
| Out of Cal Date  |                 | 11/29/2001          |           |           |
| Source           | Th              | 230                 | Tc-99     |           |
|                  | Alpha           | Beta                | Alpha     | Beta      |
| Calibration Date | 4/10            | 4/10/2001 4/10/2001 |           | 0/2001    |
| Out of Cal Date  | 3/31            | 3/31/2003 3/31/2003 |           | 31/2003   |
| Serial Number    | 1841-94 1039-92 |                     | 039-92    |           |
| Source emission  | 8880            |                     | 1         | 1100      |
| Instrument Chan  | N/A             |                     |           | N/A       |
| 2-pie Instrument | 9.21%           |                     |           | 10.70%    |
| 2 Sigma Range    | 1048-1177       |                     |           | 1436-1596 |
| 3 Sigma Range    | 1016-1209       |                     |           | 1396-1636 |

# PARSONS MAIN, INC.

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| CLIENT SEAD 12                        | JOB NO SHEET 8 OF 52           |
|---------------------------------------|--------------------------------|
| SUBJECT INITIAL FUNCTION CHECKS       | BY JAMES KUZES DATE 6-22-01    |
|                                       | CKD REVISION                   |
| INSTRUMENT : PHUSWICH #1 REASON       | FOR NEW INITIAL FUNCTION CHECK |
| 5/N 119803 / PR 166008 IS A JIG       | UPOPADI/ REPLACENENT,          |
| JIGELA                                |                                |
| Particle: OC                          |                                |
| Background (X/B) Source Type: Th 230  | SOURCE TYPE: TO 99             |
| TIME: 1235 TIME: 1255 S/N: 1841-9     | 4 TIME: SN: 1039-92            |
| DATE : 22 JUNELOOI DATE: 22 FUNI 2001 | DATE: 22 JUN LOOI              |
| 1, 1/163 1, 1087                      | 1 1532                         |
| 2. 0/158 c. 1159                      | 2 1539                         |
| 3. 1/178 3. 1075                      | 3 1515                         |
| 4. 0/153 4. 1125                      | 4 1562                         |
| 5 0/179 5, 1091                       | 5 1498                         |
| 6 0/167 6, 1168                       | 6 1497                         |
| 7 0/168 7. 1111                       | 7 1483                         |
| 8 1/182 8. 1112                       | 8 1531                         |
| 9 2/1860 9. 1110 5:15p                | 9 1572 5:15p                   |
| 10 0/181 10 10 95                     | 10 1516 5310                   |
| 11 0/170 11. 1151                     | 11 1539                        |
| 12 1/177 12 1083 5:250                | 12 1480                        |
| 13 V179 (3, 1130                      | 17 1569 5:35p                  |
| 14 0/164 14. 1056                     | 14 1424                        |
| 15 1/164 15. 1/34 5:30                | 15 1482 5 37P                  |
| Aug: 0,53 Avg: 1113                   | Aug: 1516                      |
| o: 0.72 o: 33                         | σ: 39                          |
| 20: 1.44 20:66                        | 20: 78                         |
|                                       |                                |
| 1047 -> 1179 25 Marce                 | 1438 -> 1554                   |



12 53 1444

| DATE: 6/22/01                             | P                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AGE 19 of 52          |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Source                                    | Th-230                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Tc-99                 |
|                                           | Alpha Beta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Alpha Beta            |
| Calibration Date                          | 5/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 6/4/1999              |
| Out of Cal Date                           | 11/29/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6/4/2000              |
| Serial Number                             | 119803                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1843-94               |
| Source emission rate                      | 8880                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 11100                 |
| Instrument Channel                        | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A                   |
| High Voltage                              | 0.68                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | kV                    |
| Battery Check Reparisonal on              | 115 OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |
| Source Check Reading (1)                  | 693mi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1372                  |
| Source Check Reading (2) 808              | 741 KUL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 331                   |
| Source Check Reading (3) 775              | 7601111 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | E 1392                |
| Source Check Reading (4) §21              | 757 кис 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1439                  |
| Source Check Reading (5) 789              | 7555 KUL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1351                  |
| Source Check Reading (AVERAGE) 800        | 747.54604                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1373                  |
|                                           | and the second s |                       |
| Direct Background reading (1)             | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 183                   |
| Direct Background reading (2)             | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 205                   |
| Direct Background reading (3)             | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 183                   |
| Direct Background reading (4)             | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 190                   |
| Direct Background reading (5)             | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (93                   |
| Direct Background reading (AVERAGE)       | O. 4 he                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 190.8                 |
| Efficiency = (CPM-Background) / DPM * 100 | 9%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11%                   |
| MID-DAY SOURCE READING                    | 769 N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | N/A 1410              |
| MID-DAY BACKGROUND READING                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 193                   |
| EVENING SOURCE READING                    | 1110 327                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 1572                |
| EVENING BACKGROUND READING                | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 170                   |
| Morning check performed by                | JMK 0130 Br                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | h Smples withen 20    |
| Mid-day check performed by                | J.4K 1225 Bo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | the Simples within 20 |
| Afternoon check performed by              | Rom 5:15p                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |

A/B Phoswich Serial Number 119803/166008

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| DATE: 6-23-2001                           | PAGE 20 of 52 |         |       | 52     |  |
|-------------------------------------------|---------------|---------|-------|--------|--|
| Source                                    | Th-23         | Th-230  |       | Tc-99  |  |
|                                           | Alpha         | Beta    | Alpha | Beta   |  |
| Calibration Date                          | 5/30/20       | 001     | 6/4/  | 1999   |  |
| Out of Cal Date                           | 11/29/20      | 001     | 6/4/  | 2000   |  |
| Serial Number                             | 11980         | )3      | 184   | 3-94   |  |
| Source emission rate                      | 8880          | )       | 11    | 100    |  |
| Instrument Channel                        | N/A           |         | N     | /A     |  |
| High Voltage                              | 0.6           | 2       |       |        |  |
| Battery Check                             | <u> </u>      |         |       |        |  |
| Source Check Reading (1)                  | 1118          | /       | /     | 1517   |  |
| Source Check Reading (2)                  | 1078          |         |       | 1505   |  |
| Source Check Reading (3)                  | 1129          | 25      | 3/    | 1544   |  |
| Source Check Reading (4)                  | 1097          | 1       | 5/    | 1520   |  |
| Source Check Reading (5)                  | 1138          |         |       | 1550   |  |
| Source Check Reading (AVERAGE)            | 1112          |         | 1.    | 1527.2 |  |
|                                           |               |         |       |        |  |
| Direct Background reading (1)             |               | _       | 20    | 4      |  |
| Direct Background reading (2)             | 0             |         | 18    | 1      |  |
| Direct Background reading (3)             | 1             |         |       | 2      |  |
| Direct Background reading (4)             | 0             |         | 17    | 3      |  |
| Direct Background reading (5)             | 0             |         | 16    | 2      |  |
| Direct Background reading (AVERAGE)       | 0.4           |         | 17    | 8.4    |  |
| Efficiency = (CPM-Background) / DPM * 100 | D- 1 mt       | - 12.5% | 12    | .2%    |  |
| MID-DAY SOURCE READING                    | 106.6         | /       |       | 1512   |  |
| MID-DAY BACKGROUND READING                | Hix O         |         | 150   | ١      |  |
| EVENING SOURCE READING                    | 1126          |         | /     | 1532   |  |
| EVENING BACKGROUND READING                |               |         | 17    | 5      |  |
| Morning check performed by                | JMK O         | 930     |       |        |  |
| Mid-day check performed by                | JMK 1         | 210     |       |        |  |
| Afternoon check performed by              | KUK I         | 620     |       |        |  |

## A/B Phoswich Serial Number 119803/166008

| DATE: 6/24 (01                            | PAGE 21 of 52 |         |       |          |
|-------------------------------------------|---------------|---------|-------|----------|
| Source                                    | Th            | Th-230  |       | c-99     |
|                                           | Alpha         | Beta    | Alpha | Beta     |
| Calibration Date                          | 5/30          | )/2001  | 6/4   | /1999    |
| Out of Cal Date                           | 11/2          | 9/2001  | 6/4   | /2000    |
| Serial Number                             | 11            | 9803    | 18    | 43-94    |
| Source emission rate                      | 8             | 880     | 1     | 1100     |
| Instrument Channel                        | 1             | N/A     |       | N/A      |
| High Voltage                              |               | 0.65    |       |          |
| Battery Check                             |               | ok      |       | 1        |
| Source Check Reading (1)                  | 1115          | 413     | 0     | 1498     |
| Source Check Reading (2)                  | 1129          | 360     | 0     | 1529     |
| Source Check Reading (3)                  | 1064          | 366     | 2     | 1539     |
| Source Check Reading (4)                  | 1092          | 353     | 1     | 1585     |
| Source Check Reading (5)                  | 1028          | 373     | 2     | 1541     |
| Source Check Reading (AVERAGE)            | 1086          | 373     | 5     | 1538     |
| Direct Background reading (1)             | 2/17          | 9       |       | /        |
| Direct Background reading (2)             | 1/16          | 2       |       |          |
| Direct Background reading (3)             | 0/10          | 7       |       | J.       |
| Direct Background reading (4)             | 0/18          | 30      | 7     |          |
| Direct Background reading (5)             | 1/18          | 59      |       |          |
| Direct Background reading (AVERAGE)       | 8.411         | 81      | /     |          |
| Efficiency = (CPM-Background) / DPM * 100 | \$ 12%        | P 12%   | HA    | -        |
| MID-DAY SOURCE READING                    | 10 87         | MA      | Plx   | 1493     |
| MID-DAY BACKGROUND READING                | 4             | \$ 2 AL | F     | 34165 AL |
| EVENING SOURCE READING                    | 1066          | NA      | NIA   | 1449     |
| EVENING BACKGROUND READING                |               | 1       |       | 60       |
| Morning check performed by                | em            | 07250   |       |          |
| Mid-day check performed by                | AML           | 1205    |       |          |
| Afternoon check performed by              | IML           |         |       |          |

# A/B Phoswich Serial Number 119803/166008

| DATE: 1/25/01                             | PAGE 22 of 52                         |          |              | 52    |  |
|-------------------------------------------|---------------------------------------|----------|--------------|-------|--|
| Source                                    | Th-                                   | Th-230   |              | c-99  |  |
|                                           | Alpha                                 | Beta     | Alpha        | Beta  |  |
| Calibration Date                          | 5/30                                  | /2001    | 6/4/1999     |       |  |
| Out of Cal Date                           | 11/29/2001                            |          | 6/4/2000     |       |  |
| Serial Number                             | 119                                   | 9803     | 18           | 43-94 |  |
| Source emission rate DPM                  | 88                                    | 80       | 11100<br>N/A |       |  |
|                                           | IN                                    | /A       |              | N/A   |  |
| High Voltage                              |                                       | 0.65     |              |       |  |
| Battery Check                             |                                       | OK       |              |       |  |
| Source Check Reading (1)                  | 1051                                  | 1051 406 |              | 1571  |  |
| Source Check Reading (2)                  | 1021                                  | 342      | 1            | 1548  |  |
| Source Check Reading (3)                  | 1102                                  | 308      | 0            | 1530  |  |
| Source Check Reading (4)                  | 1026                                  | 352      | 1            | 1487  |  |
| Source Check Reading (5)                  | 1042                                  | 39)      | 2            | 1486  |  |
| Source Check Reading (AVERAGE)            | 1048                                  | 360      | 1            | 1524  |  |
|                                           | · · · · · · · · · · · · · · · · · · · |          |              |       |  |
| Direct Background reading (1)             | 011                                   | 48       |              | /     |  |
| Direct Background reading (2)             | 2                                     | 171      |              |       |  |
| Direct Background reading (3)             | 011                                   | 77       | 1 V          |       |  |
| Direct Background reading (4)             | 011                                   | 73       | /            |       |  |
| Direct Background reading (5)             | 0110                                  | el       |              |       |  |
| Direct Background reading (AVERAGE)       | 0/11                                  | 00       | /            | _     |  |
| Efficiency = (CPM-Background) / DPM * 100 | d 17                                  | 270      | P 12%        |       |  |
| MID-DAY SOURCE READING                    | 1048                                  | NIA      | NIA          | 1340  |  |
| MID-DAY BACKGROUND READING                | τ                                     | )        | 17           | 6     |  |
| EVENING SOURCE READING                    | 1054                                  | NA       | NA           | 1442  |  |
| EVENING BACKGROUND READING                | 0                                     | ,        | 15           | 1     |  |
| Morning check performed by                | AML                                   | 73       | 0            |       |  |
| Mid-day check performed by                | AML                                   | 12       | 00           |       |  |
| Afternoon check performed by              | AML 1733                              |          |              |       |  |

# A/B Phoswich Serial Number 119803/166008

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AN Weather: Sunny, dry, 65°F White ": Sunny, dry, 65°F PARSONS ENGINEERING SCIENCE Survey, duy, 73.F PM Weather:

| PAGE 23 of 52 |             |            |  |
|---------------|-------------|------------|--|
| Th-230        |             | Tc-99      |  |
| Beta          | Alpha       | Beta       |  |
| /2001         | 6/4/1999    |            |  |
| /2001         | 6/4         | /2000      |  |
| 80            | 10          | 43-94      |  |
| /A            | 1           | N/A        |  |
| 0.65          |             |            |  |
| ok            |             |            |  |
|               | /           | 1489       |  |
|               |             | 1500       |  |
|               |             | 1472       |  |
| . /           | $\Lambda$   | 1494       |  |
|               |             | 1495       |  |
| /             |             | 1490       |  |
|               |             |            |  |
| 1             | 18          | 31         |  |
| 2             |             | 76         |  |
| 6             |             | 8          |  |
| 0             | 169         |            |  |
| 5             | 16          | 2          |  |
| 0             | 16          | 167        |  |
| 510           | WK-BI I     | 1.9 %.     |  |
|               | /           | 1464       |  |
|               | 14          | 5          |  |
| NA            | NIA         | 1521       |  |
| 2             | 150         | 1          |  |
| -00           |             |            |  |
| 10 ~          | 15° AND 33. | Y NV       |  |
| 1740          |             |            |  |
|               | 1740<br>"F  | 1740<br>"F |  |

## A/B Phoswich Serial Number 119803/166008

PARSONS ENGINEERING SCIENCE

| DATE: 6/27/01                             |                 | PAC  | SE 24 of               | 52                           |
|-------------------------------------------|-----------------|------|------------------------|------------------------------|
| Source                                    | Th-230          | Data | Alaba                  | -99<br>Dete                  |
| Calibration Date                          | Alpha 5/30/2001 | Dela | Alpha<br>6/4/          | 1999                         |
| Out of Cal Date                           | 11/29/200       | 1    | 6/4/                   | 2000                         |
| Serial Number                             | 119803          |      | 184                    | 3-94                         |
| Source emission rate                      | 8880            |      | 11100                  |                              |
| Instrument Channel                        | N/A             |      | N/A                    |                              |
| High Voltage                              | 6.6             | 5    |                        |                              |
| Battery Check                             | OIL             |      |                        | +                            |
| Source Check Reading (1)                  | 1019            |      |                        | 1515                         |
| Source Check Reading (2)                  | 1070            |      |                        | 1517                         |
| Source Check Reading (3)                  | 1130            |      |                        | 1476                         |
| Source Check Reading (4)                  | 1105            |      |                        | 1446                         |
| Source Check Reading (5)                  | 1026            |      | 1                      | 1504                         |
| Source Check Reading (AVERAGE)            | 1070            |      | /                      | 1492                         |
|                                           | 1               |      |                        |                              |
| Direct Background reading (1)             | 0               |      | 13                     | 6                            |
| Direct Background reading (2)             | 1               |      | 18                     | E                            |
| Direct Background reading (3)             | 1               |      | 154                    | 1                            |
| Direct Background reading (4)             | 0               |      | 149                    |                              |
| Direct Background reading (5)             | D               |      | 155                    | 5                            |
| Direct Background reading (AVERAGE)       | 0.4             |      | 155                    |                              |
| Efficiency = (CPM-Background) / DPM * 100 | 12%             |      | 12%                    | · ·                          |
| MID-DAY SOURCE READING                    | 1090            |      |                        | 1425                         |
| MID-DAY BACKGROUND READING                | 0               |      | 164                    |                              |
| EVENING SOURCE READING                    | 1100            |      |                        | 1384                         |
| EVENING BACKGROUND READING                | 5               |      | 20                     | 7                            |
| Morning check performed by                | AML             | 0710 | weat                   | sunny.                       |
| Mid-day check performed by                | KILS            | 1224 |                        | 3                            |
|                                           | 10185           | 1727 | An International State | A CONTRACTOR OF A CONTRACTOR |

A/B Phoswich Serial Number 119803/166008

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| DATE: 6128/01                             |            | PAGE 25 of 52 |  |
|-------------------------------------------|------------|---------------|--|
| Source                                    | Th-230     | Tc-99         |  |
|                                           | Alpha Beta | a Alpha Beta  |  |
| Calibration Date                          | 5/30/2001  | 6/4/1999      |  |
| Out of Cal Date                           | 11/29/2001 | 6/4/2000      |  |
| Serial Number                             | 119803     | 1843-94       |  |
| Source emission rate                      | 8880       | 11100         |  |
| High Voltage                              | 0.5        | 6 W           |  |
| Battery Check                             | 01         | L             |  |
| Source Check Reading (1)                  | 1087 148   |               |  |
| Source Check Reading (2)                  | 1058       | 1438          |  |
| Source Check Reading (3)                  | 1062 N     | K KUL 1563    |  |
| Source Check Reading (4)                  | 1060       | 1508          |  |
| Source Check Reading (5)                  | 1079       | 1527          |  |
| Source Check Reading (AVERAGE)            | 1069       | 1503.8        |  |
|                                           |            |               |  |
| Direct Background reading (1)             |            | 163           |  |
| Direct Background reading (2)             | 2 185      |               |  |
| Direct Background reading (3)             | 5          | 152           |  |
| Direct Background reading (4)             | 2          | 145           |  |
| Direct Background reading (5)             | 5          | 157           |  |
| Direct Background reading (AVERAGE)       | 2.6        | 160.4         |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12.0       | 12.1%         |  |
| MID-DAY SOURCE READING                    | 1117       | 1504          |  |
| MID-DAY BACKGROUND READING                | 3          | 1:05          |  |
| EVENING SOURCE READING                    | 1109       | 1507          |  |
| EVENING BACKGROUND READING                | 3          | 144           |  |
| Morning check performed by                | KUK O7D    |               |  |
| Mid-day check performed by                | AML 1215   | Clo-dy, 75°F  |  |
| Afternoon check performed by              | AML 1730   | Cloudy, 70°F  |  |

# A/B Phoswich Serial Number 119803/166008

A/B Phoswich Serial Number 119803/166008

| DATE: 6/29/01                             | PA                                                               | GE 26 of 52                                                               |              |
|-------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------|--------------|
| Source                                    | Th-230                                                           | Tc-99                                                                     |              |
|                                           | Alpha Beta                                                       | Alpha Beta                                                                |              |
| Calibration Date                          | 5/30/2001                                                        | 6/4/1999                                                                  |              |
| Out of Cal Date                           | 11/29/2001                                                       | 6/4/2000                                                                  | 2            |
| Serial Number                             | 8880                                                             | 1843-94                                                                   |              |
| Instrument Channel                        | N/A                                                              | N/A                                                                       |              |
| High Voltage                              | 0.6                                                              | ~~~                                                                       |              |
| Battery Check                             | or                                                               |                                                                           |              |
| Source Check Reading (1)                  | 1044                                                             | ++++14                                                                    | 73           |
| Source Check Reading (2)                  | 1054                                                             | 1491                                                                      |              |
| Source Check Reading (3)                  | 966 A                                                            | 1469                                                                      |              |
| Source Check Reading (4)                  | 1122                                                             | 1399                                                                      |              |
| Source Check Reading (5)                  | 1114                                                             | 1570                                                                      |              |
| Source Check Reading (AVERAGE)            | 1060                                                             | 1480                                                                      | 1            |
| Direct Reckground reading (1)             | 0                                                                | 1105                                                                      |              |
| Direct Background reading (1)             | 2                                                                | 152                                                                       |              |
| Direct Background reading (3)             | 5                                                                | 1710                                                                      |              |
| Direct Background reading (4)             | 6                                                                | 171                                                                       |              |
| Direct Background reading (5)             | 1                                                                | 176                                                                       |              |
| Direct Background reading (AVERAGE)       | 2.8                                                              | 168                                                                       |              |
| Efficiency = (CPM-Background) / DPM * 100 | 1270                                                             | (270                                                                      |              |
| MID-DAY SOURCE READING                    | 1062                                                             | 1443                                                                      | 1.470 (      |
| MID-DAY BACKGROUND READING                | 5                                                                | 157                                                                       | AJIC         |
| EVENING SOURCE READING                    | 1102+                                                            | 1380 *                                                                    | /            |
| EVENING BACKGROUND READING                | 2                                                                | 168                                                                       | 1/107        |
| Morning check performed by                | AML 0700                                                         | cloudy 700F                                                               |              |
| Mid-day check performed by                | JRH 1125                                                         |                                                                           |              |
| Afternoon check performed by              | JMK 1524                                                         | (lowly Stor                                                               |              |
| New<br>PARSONS ENC<br>Nee                 | J Mylor was in<br>GINEERING SCIENCE<br>d to do 15 func<br>Mondan | stalled 1540 N<br>Need to check aga<br>the check prevent<br>of next shift | RH<br>Anderg |

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| DATE: 7/9/01 PAGE 27 0                    |            |                |                | 52    |
|-------------------------------------------|------------|----------------|----------------|-------|
| Source Th-23                              |            | Th-230 1       |                | -99   |
|                                           | Alpha      | Beta           | Alpha          | Beta  |
| Calibration Date                          | 5/30/      | 2001           | 6/4/           | 1999  |
| Out of Cal Date                           | 11/29/2001 |                | 6/4/2          | 2000  |
| Serial Number                             | 119803     |                | 1843-94        |       |
| Source emission rate                      | 88         | 80             | 11100          |       |
|                                           |            |                | N              | /A    |
| High Voltage                              | '`)_       | 6 KV           |                |       |
| Battery Check                             | 0          | K_             | 1              |       |
| Source Check Reading (1)                  |            | _              |                |       |
| Source Check Reading (2)                  |            | Cont           | e cinec        | 6     |
| Source Check Reading (3)                  |            | Sche           | 10/01          |       |
| Source Check Reading (4)                  |            | cr             | -11-00         |       |
| Source Check Reading (5)                  |            | and the second |                |       |
| Source Check Reading (AVERAGE)            |            |                |                |       |
| Direct Background reading (1)             | 3          | AL             | 18             | + AL  |
| Direct Background reading (2)             | 14         | AL             | 194            | AL    |
| Direct Background reading (3)             |            |                |                |       |
| Direct Background reading (4)             |            | Score          | Caect          |       |
| Direct Background reading (5)             |            | 00             | 7/9/01         |       |
| Direct Background reading (AVERAGE)       |            |                | and the second | _     |
| Efficiency = (CPM-Background) / DPM * 100 | NA         |                | NA             |       |
| MID-DAY SOURCE READING                    | 1062       | 340            | -3 8           | 14651 |
| MID-DAY BACKGROUND READING                | KK +=      | 1 -71          | 147            |       |
| EVENING SOURCE READING                    | 10831003   | 390 H          |                | 1437  |
| EVENING BACKGROUND READING                |            | 3              | 182            |       |
| Morning check performed by                | AHL .      | 79/01          |                |       |
| Mid-day check performed by                | 16.8.3     |                |                |       |
| Afternoon check performed by Sunn u 70°F  | AML        | 1745           |                |       |

# A/B Phoswich Serial Number 119803/166008

| A/B Phoswich Serial Numbe | er 119003/100000 |
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| DATE: 7/10/01                             | PAGE 28 of 57 |                            |  |  |
|-------------------------------------------|---------------|----------------------------|--|--|
| Source                                    | Th-230        | Tc-99                      |  |  |
|                                           | Alpha Beta    | Alpha Beta                 |  |  |
| Calibration Date                          | 5/30/2001     | 6/4/1999                   |  |  |
| Out of Cal Date                           | 11/29/2001    | 6/4/2000                   |  |  |
| Serial Number                             | 119803        | 1843-94                    |  |  |
| Source emission rate                      | 8880          | 11100                      |  |  |
|                                           | N/A           | N/A                        |  |  |
| High Voltage                              | 6.6 m         |                            |  |  |
| Battery Check                             | OK            |                            |  |  |
| Source Check Reading (1)                  | 1079          | 1492                       |  |  |
| Source Check Reading (2)                  | 1031          | 1455                       |  |  |
| Source Check Reading (3)                  | 1059          | 451                        |  |  |
| Source Check Reading (4)                  | 1024          | 1518                       |  |  |
| Source Check Reading (5)                  | 1085          | 1549                       |  |  |
| Source Check Reading (AVERAGE)            | 1056 /        | 1494                       |  |  |
|                                           |               |                            |  |  |
| Direct Background reading (1)             | 4             | 183                        |  |  |
| Direct Background reading (2)             | 2             | 182                        |  |  |
| Direct Background reading (3)             | 3             | 167                        |  |  |
| Direct Background reading (4)             | 0             | 166                        |  |  |
| Direct Background reading (5)             | 2             | 165                        |  |  |
| Direct Background reading (AVERAGE)       | . 4           | 173                        |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%           | 12%                        |  |  |
| MID-DAY SOURCE READING                    | 1101          | 1395                       |  |  |
| MID-DAY BACKGROUND READING                | 3/158         |                            |  |  |
| EVENING SOURCE READING                    | 1078          | 1390                       |  |  |
| EVENING BACKGROUND READING                | ž             | 141                        |  |  |
| Morning check performed by                | AML 0700 CIU  | idy way 70°F               |  |  |
| Mid-day check performed by                | Rom 11:50 Som | 14 74'F                    |  |  |
| Afternoon check performed by              | AML 1730 Cle  | AML 1730 Clear, worm, 78°F |  |  |

| DATE: JIIIGI                              |            | PAGE 29 of 52 |         |  |  |
|-------------------------------------------|------------|---------------|---------|--|--|
| Source                                    | Th-230     | Тс            | Tc-99   |  |  |
|                                           | Alpha B    | eta Alpha     | Beta    |  |  |
| Calibration Date                          | 5/30/2001  | 6/4/          | 1999    |  |  |
| Out of Cal Date                           | 11/29/2001 | 6/4/          | 2000    |  |  |
| Serial Number                             | 119803     | 184           | 3-94    |  |  |
|                                           | 000U       | 11            | 100     |  |  |
|                                           | N/A        |               | A       |  |  |
| High Voltage                              | 0.65       | KU            |         |  |  |
| Battery Check                             | 016        | - /1          |         |  |  |
| Source Check Reading (1)                  | 1038       | _//           | 1569    |  |  |
| Source Check Reading (2)                  | 1801       |               | 1389    |  |  |
| Source Check Reading (3)                  | 1123 3     | 4 34          | 1416    |  |  |
| Source Check Reading (4)                  | 1084       | Y             | 1442    |  |  |
| Source Check Reading (5)                  | 1121       | /             | 1439    |  |  |
| Source Check Reading (AVERAGE)            | 1089       |               | 1451    |  |  |
| , , , , , , , , , , , , , , , , , , ,     | 10011      |               |         |  |  |
| Direct Background reading (1)             | 7          | 15            | 3       |  |  |
| Direct Background reading (2)             | 2          | 10            | olo     |  |  |
| Direct Background reading (3)             | 3          | 15            | 58      |  |  |
| Direct Background reading (4)             | 1          | 1             | 50      |  |  |
| Direct Background reading (5)             | 1          | 18            | 4       |  |  |
| Direct Background reading (AVERAGE)       | 3          | 1 (0          | 5       |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%        | 12            | 70      |  |  |
| MID-DAY SOURCE READING                    | 1040 pm    |               | 1421    |  |  |
| MID-DAY BACKGROUND READING                | 1          | 1-            | 12      |  |  |
| EVENING SOURCE READING                    | 1103       |               | 1428    |  |  |
| EVENING BACKGROUND READING                | 1090       | 2 165 14      | tat .   |  |  |
| Morning check performed by                | AUL 0710   | Warn 70°F     | sunny   |  |  |
| Mid-day check performed by                | AML 1200   | sunny was     | in 7407 |  |  |
| Afternoon check performed by              | Rom SID    | p 750 sun     | 14      |  |  |

# A/B Phoswich Serial Number 119803/166008

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A/B Phoswich Serial Number 119803/166008

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| DATE:                                     | 7/12/01    | PAGE 3 0 of 52 |
|-------------------------------------------|------------|----------------|
| Source                                    | Th-230     | Tc-99          |
|                                           | Alpha Beta | Alpha Beta     |
| Calibration Date                          | 5/30/2001  | 6/4/1999       |
| Out of Cal Date                           | 11/29/2001 | 6/4/2000       |
| Serial Number                             | 119803     | 1843-94        |
| Source emission rate                      |            | 11100          |
| High Voltage                              | 6,65       |                |
| Battery Check                             | OIC        |                |
| Source Check Reading (1)                  | 996        | / / 1449       |
| Source Check Reading (2)                  | 976        | 1486           |
| Source Check Reading (3)                  | 1073       | 1478           |
| Source Check Reading (4)                  | 1021       | 1-143          |
| Source Check Reading (5)                  | 1038       | 1406           |
| Source Check Reading (AVERAGE)            | 1021       | 1452           |
|                                           |            |                |
| Direct Background reading (1)             | 2          | 166            |
| Direct Background reading (2)             | 2          | 178            |
| Direct Background reading (3)             | 5          | 192            |
| Direct Background reading (4)             | 2          | 195            |
| Direct Background reading (5)             | 5          | 182            |
| Direct Background reading (AVERAGE)       | 5          | 181            |
| Efficiency = (CPM-Background) / DPM * 100 | 1170       | 11 70          |
| MID-DAY SOURCE READING                    | 1069       | 1473           |
| MID-DAY BACKGROUND READING                | 5          | 186            |
| EVENING SOURCE READING                    | 998        | 1476           |
| EVENING BACKGROUND READING                | 5498 3     | ררו            |
| Morning check performed by                | AHL, CLOUE | 4 cbolt 0700   |
| Mid-day check performed by                | JMK PC 7   | 0°F            |
| Afternoon check performed by              | JUK P/c 7  | 0°F            |

| DATE: 7 13 01                             |           | PAGE 3 of S2       |            |        |  |
|-------------------------------------------|-----------|--------------------|------------|--------|--|
| Source                                    | Th-230    | Th-230             |            | -99    |  |
|                                           | Alpha     | Beta               | Alpha      | Beta   |  |
| Calibration Date                          | 5/30/200  | 1                  | 6/4/       | 1999   |  |
| Serial Number                             | 110803    |                    | 0/4/       | 2000   |  |
| Source emission rate                      | 8880      | -                  | 10-        | 100    |  |
| Instrument Channel                        | N/A       |                    | N          | I/A    |  |
| High Voltage                              | 0.65      |                    |            |        |  |
| Battery Check                             | OK        |                    |            |        |  |
| Source Check Reading (1)                  | 1118 -    |                    | -          | 1473   |  |
| Source Check Reading (2)                  | 1024      |                    |            | 1538   |  |
| Source Check Reading (3)                  | 1019      |                    |            | 1485   |  |
| Source Check Reading (4)                  | 1014      |                    |            | 1459   |  |
| Source Check Reading (5)                  | 1071      |                    |            | 1472   |  |
| Source Check Reading (AVERAGE)            | 1049,2    |                    |            | 1485.4 |  |
|                                           |           |                    |            |        |  |
| Direct Background reading (1)             | 2         |                    | 14         | 9      |  |
| Direct Background reading (2)             | 5         |                    | 177        |        |  |
| Direct Background reading (3)             | 5         |                    | 166        |        |  |
| Direct Background reading (4)             | 3         |                    | 195        |        |  |
| Direct Background reading (5)             | 4         |                    | 176        |        |  |
| Direct Background reading (AVERAGE)       | 3.8       |                    | 112K 172.6 |        |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%       |                    | 12%        |        |  |
| MID-DAY SOURCE READING                    | 1028      |                    | /          | 1459   |  |
| MID-DAY BACKGROUND READING                | Ø         |                    | 187        |        |  |
| EVENING SOURCE READING                    | 1063      | /                  | /          | 1544   |  |
| EVENING BACKGROUND READING                | 1         |                    | 183        |        |  |
| Morning check performed by                | AML 0700  | CION               | Ly warm    | D. 684 |  |
| Mid-day check performed by                | KICS 1158 |                    | 0          |        |  |
| Afternoon check performed by              | 1515 1735 | Kis 1735 Cloud, 75 |            |        |  |

# A/B Phoswich Serial Number 119803/166008

| DATE: 7114/01                             | 7/14/01 PAGE 32 of |                           |  |  |
|-------------------------------------------|--------------------|---------------------------|--|--|
| Source                                    | Th-230             | Tc-99                     |  |  |
|                                           | Alpha Beta         | a Alpha Beta              |  |  |
| Calibration Date                          | 5/30/2001          | 6/4/1999                  |  |  |
| Out of Cal Date                           | 11/29/2001         | 6/4/2000                  |  |  |
| Serial Number                             | 119803             | 1843-94                   |  |  |
| Source emission rate                      | 8880               | 11100                     |  |  |
| Instrument Channel                        | N/A                | N/A                       |  |  |
| High Voltage                              | 0.65               | ·····                     |  |  |
| Battery Check                             | OK                 |                           |  |  |
| Source Check Reading (1)                  | 1013               | 1522                      |  |  |
| Source Check Reading (2)                  | 1042               | 1565                      |  |  |
| Source Check Reading (3)                  | 1072               | 1489                      |  |  |
| Source Check Reading (4)                  | 1031               | 1495                      |  |  |
| Source Check Reading (5)                  | 1046               | 1472                      |  |  |
| Source Check Reading (AVERAGE)            | 1041               | 1 1509                    |  |  |
|                                           |                    |                           |  |  |
| Direct Background reading (1)             |                    | 159                       |  |  |
| Direct Background reading (2)             | 4                  | 180                       |  |  |
| Direct Background reading (3)             |                    | 160                       |  |  |
| Direct Background reading (4)             | 2                  | 144                       |  |  |
| Direct Background reading (5)             |                    | 189                       |  |  |
| Direct Background reading (AVERAGE)       | 1.6                | 168                       |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%                | 12%                       |  |  |
| MID-DAY SOURCE READING                    | 1048               | 1442                      |  |  |
| MID-DAY BACKGROUND READING                | 1                  | 151                       |  |  |
| EVENING SOURCE READING                    | NA                 | $\rightarrow \rightarrow$ |  |  |
| EVENING BACKGROUND READING                | NA                 |                           |  |  |
| Morning check performed by                | JRH 070            | 5 con rainy               |  |  |
| Mid-day check performed by                | S.H. (Jim)         | ~1145                     |  |  |
| Afternoon check performed by              | not used in        | not used in PM            |  |  |

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## A/B Phoswich Serial Number 119803/166008

| A/B Phosw | vich Serial | Number 1 | 19803/1 | 66008 |
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| DATE: 7-15-01                             | PAGE 33 of 52 |          |            | 52           |
|-------------------------------------------|---------------|----------|------------|--------------|
| Source                                    | Th-230        |          | Tc-99      |              |
|                                           | Alpha         | Beta     | Alpha      | Beta         |
| Calibration Date                          | 5/30/2        | 2001     | 6/4/       | 199 <b>9</b> |
| Out of Cal Date                           | 11/29/        | /2001    | 6/4/       | 2000         |
| Serial Number                             | 1198          | 803      | 184        | 3-94         |
| Source emission rate                      | 888           | 80       | 11         | 100          |
|                                           | N/            |          | N          | 1/A          |
| High Voltage                              | 0.6           | 04       |            |              |
| Battery Check                             |               | <b>`</b> |            |              |
| Source Check Reading (1)                  | 1004          |          |            | 1523         |
| Source Check Reading (2)                  | 982           |          | /          | 1510         |
| Source Check Reading (3)                  | 1064          |          | J.         | 1470         |
| Source Check Reading (4)                  | 995           | Y        |            | 1539         |
| Source Check Reading (5)                  | 1033          |          |            | 1531         |
| Source Check Reading (AVERAGE)            | 1015.6        | /        |            | 1514.6       |
|                                           | 1             |          |            | See. 2       |
| Direct Background reading (1)             | Muly 77       | - 3      | 174        | 1            |
| Direct Background reading (2)             | -             | 8        | 199        |              |
| Direct Background reading (3)             |               | 5        | 160        |              |
| Direct Background reading (4)             |               | 3        | 162        |              |
| Direct Background reading (5)             |               | 5        | 186        |              |
| Direct Background reading (AVERAGE)       | 4.8           | -        | 176.2      |              |
| Efficiency = (CPM-Background) / DPM * 100 | 1             | 4%       | 12.19      | 10           |
| MID-DAY SOURCE READING                    | 1014          |          |            | 1422         |
| MID-DAY BACKGROUND READING                | 5             |          | 10         | 15           |
| EVENING SOURCE READING                    | 1022          | 1        | /          | 1418         |
| EVENING BACKGROUND READING                | 2             | 2        | 14         | 2            |
| Morning check performed by JAMER KURFIS   | 0715 - P/C    | 68°F 1   | DRE JAK M. | cdente       |
| Mid-day check performed by JMK            | € 1200        | 72°F     | 1          |              |
| Afternoon check performed by              | KLK           |          |            | -            |

| A/B | Phoswich | Serial | Number | 11 | 9803/ | 166008 |
|-----|----------|--------|--------|----|-------|--------|
|-----|----------|--------|--------|----|-------|--------|

| DATE: -7 16 01                            | PAGE 24 of 52 |            |  |
|-------------------------------------------|---------------|------------|--|
| Source                                    | Th-230        | Tc-99      |  |
|                                           | Alpha Beta    | Alpha Beta |  |
| Calibration Date                          | 5/30/2001     | 6/4/1999   |  |
| Out of Cal Date                           | 11/29/2001    | 6/4/2000   |  |
| Serial Number                             | 119803        | 1843-94    |  |
| Source emission rate                      | 8880          | 11100      |  |
|                                           | N/A           | N/A        |  |
| High Voltage                              | C.65 KV       |            |  |
| Battery Check                             | OIC           |            |  |
| Source Check Reading (1)                  | 974 /         | 1478       |  |
| Source Check Reading (2)                  | 764           | 1,529      |  |
| Source Check Reading (3)                  | 1082 1        | 1480       |  |
| Source Check Reading (4)                  | 1061          | 1511       |  |
| Source Check Reading (5)                  | 986 /         | 1489       |  |
| Source Check Reading (AVERAGE)            | 1013          | 1497       |  |
|                                           |               |            |  |
| Direct Background reading (1)             | 4             | 152        |  |
| Direct Background reading (2)             | 3             | 173        |  |
| Direct Background reading (3)             | 4             | 155        |  |
| Direct Background reading (4)             | 1             | /58        |  |
| Direct Background reading (5)             | -1            | 169        |  |
| Direct Background reading (AVERAGE)       | 4             | 161        |  |
| Efficiency = (CPM-Background) / DPM * 100 | 11 70         | 1270       |  |
| MID-DAY SOURCE READING                    | 1050          | 1407       |  |
| MID-DAY BACKGROUND READING                | em 6          | 176        |  |
| EVENING SOURCE READING (2                 | 22 367        | 1401       |  |
| EVENING BACKGROUND READING                | Land Land     | 165        |  |
| Morning check performed by April 0700     | SULDY 640F    |            |  |
| Mid-day check performed by ANL 1200       | Smay, mary,   | 73°5       |  |
| Afternoon check performed by Rom 5- 30    | overcest 76   | n          |  |

| DATE: 7/17/01 PAGE 35                     |         |           | GE 35 of  | 52      |
|-------------------------------------------|---------|-----------|-----------|---------|
| Source                                    | Th-230  |           |           | -99     |
|                                           | Alpha   | Beta      | Alpha     | Beta    |
| Calibration Date                          | 5/30/   | 2001      | 6/4/      | 1999    |
| Out of Cal Date                           | 11/29   | /2001     | 6/4/      | 2000    |
| Serial Number                             | 119     | 803       | 184       | 3-94    |
| Source emission rate                      | 88      | 80        | 11        | 100     |
| High Voltage                              |         | 2.6       | SEV       |         |
| Battery Check                             |         | ok        |           |         |
| Source Check Reading (1)                  | 1057    |           |           | 1454    |
| Source Check Reading (2)                  | 997     |           | /         | 1471 .  |
| Source Check Reading (3)                  | 1057    | K         | /         | 1414 .  |
| Source Check Reading (4)                  | 1006    | · ·       |           | 1446.   |
| Source Check Reading (5)                  | 1005    |           |           | 1496    |
| Source Check Reading (AVERAGE)            | 1024.4  | /         |           | 1456.Z. |
|                                           |         |           |           |         |
| Direct Background reading (1)             |         | 6         | 175       | -       |
| Direct Background reading (2)             | 1       | 3         | 182       | L       |
| Direct Background reading (3)             |         | 3         | 192       | L       |
| Direct Background reading (4)             |         | 4         | 168       |         |
| Direct Background reading (5)             |         | 1         | 162       | -       |
| Direct Background reading (AVERAGE)       |         | 34        | 17:       | 5.8     |
| Efficiency = (CPM-Background) / DPM * 100 |         | 11.5%     | 11.5      | 5%0     |
| MID-DAY SOURCE READING                    | 1074    |           |           | 1459    |
| MID-DAY BACKGROUND READING                | 4       |           | 16        | 4       |
| EVENING SOURCE READING                    | tomonow | morning   | for chuck | e will  |
| EVENING BACKGROUND READING                | be used | bloit     | is poppe  | ed.     |
| Morning check performed by                | JEG R   | m i       | 70° rain  | 14      |
| Mid-day check performed by                | JMK 7   | 2" P/C HI | UMID      | /       |
| Afternoon check performed by              | NA      | -         |           |         |

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# A/B Phoswich Serial Number 119803/166008

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| DATE: 7-18-209                            | PAGE 36 of 52 |        |        |       |  |
|-------------------------------------------|---------------|--------|--------|-------|--|
| Source                                    | Th-           | 230    | Tc-99  |       |  |
|                                           | Alpha         | Beta   | Alpha  | Beta  |  |
| Calibration Date                          | 5/30/         | 2001   | 6/4/   | 1999  |  |
| Out of Cal Date                           | 11/29         | /2001  | 6/4/   | 2000  |  |
| Serial Number                             | 119           | 803    | 184    | 3-94  |  |
| Source emission rate                      | 88            | 180    | 11     | 100   |  |
|                                           | N             | IA     |        | I/A   |  |
| High Voltage                              | 0.1           | 62kV   |        |       |  |
| Battery Check                             |               | OK     | ,      |       |  |
| Source Check Reading (1)                  | 1979          | -270m  | /      | 1528  |  |
| Source Check Reading (2)                  | 1029          | 314    |        | 1450  |  |
| Source Check Reading (3)                  | ,024          | 347    |        | 1490  |  |
| Source Check Reading (4)                  | 1062          | 320    |        | 1421  |  |
| Source Check Reading (5)                  | 1036          | 324    |        | 1492  |  |
| Source Check Reading (AVERAGE)            | 1031.8        | 252.2  |        | 148.2 |  |
|                                           |               |        |        |       |  |
| Direct Background reading (1)             | 5             |        | 17     | 2     |  |
| Direct Background reading (2)             | 3             |        | 143    |       |  |
| Direct Background reading (3)             | . 5           |        | 185    |       |  |
| Direct Background reading (4)             | 6             |        | 157    |       |  |
| Direct Background reading (5)             | 4             | _      | 180    |       |  |
| Direct Background reading (AVERAGE)       | · 4           | 1.6    | 167    | .4    |  |
| Efficiency = (CPM-Background) / DPM * 100 | [1]           | ,6%    | 11.8%  |       |  |
| MID-DAY SOURCE READING                    | 1027          |        |        | 4464  |  |
| MID-DAY BACKGROUND READING                |               | 1      | 15     | D     |  |
| EVENING SOURCE READING                    | not re        | sed no | ovenn  | 5     |  |
| EVENING BACKGROUND READING                | notupe        | id in  | wening | 0     |  |
| Morning check performed by JK 0730        | F0664 6       | 8°     | 0      |       |  |
| Mid-day check performed by JK 1205        | SUANY         | 75°    |        |       |  |
| Afternoon check performed by              | NA            |        |        |       |  |

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# A/B Phoswich Serial Number 119803/166008

| DATE: 7-24-01                             | PAGE 37 of 52 |         |          |               |
|-------------------------------------------|---------------|---------|----------|---------------|
| Source                                    | Th            | -230    | Tc       | -99           |
|                                           | Alpha         | Beta    | Alpha    | Beta          |
| Calibration Date                          | 5/30          | /2001   | 6/4/1999 |               |
| Out of Cal Date                           | 11/29         | 9/2001  | 6/4/2    | 2000          |
| Serial Number                             | 119           | 9803    | 184      | 3-94          |
| Source emission rate                      | 80            | 1/A     | 11<br>N  | 100           |
|                                           | N             | 1/A     |          | /A            |
| High Voltage                              |               | 0.0     | o k.V    |               |
| Battery Check                             |               | ()      | K.       |               |
| Source Check Reading (1)                  | 1025          | <u></u> | <u>\</u> | 1364          |
| Source Check Reading (2)                  | 1021          |         |          | 1347          |
| Source Check Reading (3)                  | 1009          | KLK     | KUK      | 1373          |
| Source Check Reading (4)                  | 1042          | 1/24/01 | 11696    | 1356          |
| Source Check Reading (5)                  | 1043          | \\      |          | 1321          |
| Source Check Reading (AVERAGE)            | 1029          |         |          | 1352.2        |
|                                           |               |         |          |               |
| Direct Background reading (1)             |               | D       | [4]      | 3             |
| Direct Background reading (2)             |               | 2       | 15       | 8             |
| Direct Background reading (3)             |               | 1       | 168      | }             |
| Direct Background reading (4)             |               | 4       | 153      |               |
| Direct Background reading (5)             |               | Ч       | 143      |               |
| Direct Background reading (AVERAGE)       |               | 2.2     | 155      | >             |
| Efficiency = (CPM-Background) / DPM * 100 |               | · ( · / | 10.7     | "/c           |
| MID-DAY SOURCE READING                    | not use       | din Al  | n        |               |
| MID-DAY BACKGROUND READING                | NA -          |         |          | $\rightarrow$ |
| EVENING SOURCE READING                    | not us        | d in Pl | n        |               |
| EVENING BACKGROUND READING                | NA -          |         | ſ        | $\rightarrow$ |
| Morning check performed by                | KUK           | 0725    | humid    | 76°           |
| Mid-day check performed by                | NA            |         |          |               |
| Afternoon check performed by              | NA            |         |          |               |

## A/B Phoswich Serial Number 119803/166008

WILL MOT BELISED IN AN BIC BETA UNT OF 3SIGMA + THE EFFICIETICY IS LOWER. WILL CHECK AGAIN IN AFTERNOON PARSONS ENGINEERING SCIENCE

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| DATE: 7/25/01                             | PAGE 38 of 52 |                                         |  |
|-------------------------------------------|---------------|-----------------------------------------|--|
| Source                                    | Th-230        | Tc-99                                   |  |
|                                           | Alpha Beta    | Alpha Beta                              |  |
| Calibration Date                          | 5/30/2001     | 6/4/1999                                |  |
| Out of Cal Date                           | 11/29/2001    | 6/4/2000                                |  |
| Serial Number                             | 119803        | 1843-94                                 |  |
| Source emission rate                      | 8880          | 11100                                   |  |
| Instrument Channel                        | N/A           | N/A                                     |  |
| High Voltage                              | ot            |                                         |  |
| Battery Check                             | ok            |                                         |  |
| Source Check Reading (1)                  | 1000          | 1410                                    |  |
| Source Check Reading (2)                  | 1021          | 1427                                    |  |
| Source Check Reading (3)                  | 1061          | X 1374                                  |  |
| Source Check Reading (4)                  | 1005          | 1319                                    |  |
| Source Check Reading (5)                  | 1043          | 1398                                    |  |
| Source Check Reading (AVERAGE)            | 1026/         | 1402                                    |  |
| 1                                         |               |                                         |  |
| Direct Background reading (1)             | 4             | 175                                     |  |
| Direct Background reading (2)             | 6             | 160                                     |  |
| Direct Background reading (3)             | 5             | 160                                     |  |
| Direct Background reading (4)             | 3             | 158                                     |  |
| Direct Background reading (5)             | 6             | 186                                     |  |
| Direct Background reading (AVERAGE)       | 4.8 to m      | 168                                     |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%           | 11%                                     |  |
| MID-DAY SOURCE READING                    | not used in A | m                                       |  |
| MID-DAY BACKGROUND READING                | NA            | >                                       |  |
| EVENING SOURCE READING                    | not used mpi  | n                                       |  |
| EVENING BACKGROUND READING                | NA            | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |  |
| Morning check performed by 7:15a          | Rom 750 Sun   | ny, humid                               |  |
| Mid-day check performed by                | NA            |                                         |  |
| Afternoon check performed by              | NA            |                                         |  |

## A/B Phoswich Serial Number 119803/166008

15 Probe to be cooked at + 15 Cour reading statistics re completed

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| Site: Seneca Arm | ny Depot  |       |         |           |
|------------------|-----------|-------|---------|-----------|
| Project: SEAD-12 | 2         |       |         |           |
|                  |           |       | Page of | 52        |
| Instrument Type  |           | A     | /B      | C.K.      |
| АКА              |           | phos  | swich   |           |
| Make             |           | Luc   | llum    |           |
| Model            |           | 22    | 24      |           |
| Serial Number    |           | 119   | 803     |           |
| Calibration Date |           | 5/30/ | 2001    |           |
| Out of Cal Date  |           | 11/29 | /2001   |           |
| Probe:           | Alp       | ha    |         | Beta      |
| Make             |           | Luc   | llum    |           |
| Model            |           | 43-   | ·1-1    |           |
| Serial Number    |           | PR16  | 6008    |           |
| Calibration Date |           | 5/30/ | 2001    |           |
| Out of Cal Date  |           | 11/29 | /2001   |           |
| Source           | Th-:      | 230   | 1       | Гс-99     |
|                  | Alpha     | Beta  | Alpha   | Beta      |
| Calibration Date | 4/10/     | 2001  | 4/1     | 0/2001    |
| Out of Cal Date  | 3/31/     | 2003  | 3/3     | 1/2003    |
| Serial Number    | 1841      | 1-94  | 10      | 39-92     |
| Source emission  | 88        | 80    | 1       | 1100      |
| Instrument Chan  | N/        | A     |         | N/A       |
| 2-pie Instrument | 9.21%     |       |         | 10.70%    |
| 2 Sigma Range    | 1036-1093 |       |         | 1334-1477 |
| 3 Sigma Range    | 1022-1107 |       |         | 1299-1513 |

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| CLIENT                                                | JOB NO SHEET 40 OF 52<br>BY 2000 DATE 7/26/01            |
|-------------------------------------------------------|----------------------------------------------------------|
| Ji, Recheck after M<br>on 119803/PR166008             | hylar Replacement Scereastorany<br>8<br>10:200           |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{c}                                     $ |
| 15 6 160 11:00a 1419                                  | 1057 4:15p                                               |
A/B Phoswich Serial Number 119803/166008

| DATE: 7/27/01                             |              | PAGE 4 of 52      |          |        |  |
|-------------------------------------------|--------------|-------------------|----------|--------|--|
| Source                                    | Th-2         | 30                | Tc       | Tc-99  |  |
|                                           | Alpha        | Beta              | Alpha    | Beta   |  |
| Calibration Date                          | 5/30/2       | 2001              | 6/4/     | 1999   |  |
| Out of Cal Date                           | 11/29/2      | 2001              | 6/4/2    | 2000   |  |
| Serial Number                             | 1198         | 803               | 184      | 3-94   |  |
| Source emission rate                      | 888          | 50<br>A           | 11       | 100    |  |
|                                           | IN/ <i>F</i> | 4                 | N        | /A     |  |
| High Voltage                              |              | 0.65k             | <i>V</i> |        |  |
| Battery Check                             |              | ole               | <u> </u> |        |  |
| Source Check Reading (1)                  | 1106         |                   |          | 1557   |  |
| Source Check Reading (2)                  | 1049         |                   |          | 1422   |  |
| Source Check Reading (3)                  | 1106         |                   | N        | 1420   |  |
| Source Check Reading (4)                  | 1084         | X                 |          | 1490   |  |
| Source Check Reading (5)                  | 1081         |                   |          | 1453   |  |
| Source Check Reading (AVERAGE)            | 1085         |                   |          | 1464   |  |
|                                           |              |                   |          |        |  |
| Direct Background reading (1)             | 3            | 3                 | 16.      | 8      |  |
| Direct Background reading (2)             | 2            | 8                 | 187      |        |  |
| Direct Background reading (3)             | (            | /                 | 159      |        |  |
| Direct Background reading (4)             | 2            | 2                 | 189      |        |  |
| Direct Background reading (5)             |              | ک                 | (48      |        |  |
| Direct Background reading (AVERAGE)       | Liff         |                   | 170      |        |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%          | 0                 | 12%      | /<br>? |  |
| MID-DAY SOURCE READING                    |              |                   |          |        |  |
| MID-DAY BACKGROUND READING                | NOT US       | edin              | A.m.     |        |  |
| EVENING SOURCE READING                    | 1087         |                   |          | 1437   |  |
| EVENING BACKGROUND READING                | i            |                   | 14       | 1      |  |
| Morning check performed by                | Rom 7:       | 13a 6             | 5° SrAnc | 1      |  |
| Mid-day check performed by                | NOTUSE       | Not used in a.m.  |          |        |  |
| Afternoon check performed by              | Rm T         | Rm 74° 5:250 smal |          |        |  |

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# A/B Phoswich Serial Number 119803/166008

| DATE: 7/28(01                             | PAGE 42 of 52   |                          |  |  |
|-------------------------------------------|-----------------|--------------------------|--|--|
| Source                                    | Th-230          | Tc-99                    |  |  |
|                                           | Alpha Beta      | Alpha Beta               |  |  |
| Calibration Date                          | 5/30/2001       | 6/4/1999                 |  |  |
| Out of Cal Date                           | 11/29/2001      | 6/4/2000                 |  |  |
| Serial Number                             | 119803          | 1843-94                  |  |  |
| Source emission rate                      | 8880<br>N/A     | N/A                      |  |  |
| High Voltage                              | 0.65 6          | V                        |  |  |
| Battery Check                             | ok              |                          |  |  |
| Source Check Reading (1)                  | 1040            | 1429                     |  |  |
| Source Check Reading (2)                  | 1060            | 1524                     |  |  |
| Source Check Reading (3)                  | 10:9            | 1447                     |  |  |
| Source Check Reading (4)                  | 1109            | 1398                     |  |  |
| Source Check Reading (5)                  | 1081            | 1448                     |  |  |
| Source Check Reading (AVERAGE)            | 1062/           | 1445                     |  |  |
|                                           |                 | ter - terreterine in - t |  |  |
| Direct Background reading (1)             | 7               | 166                      |  |  |
| Direct Background reading (2)             | Y .             | 178                      |  |  |
| Direct Background reading (3)             | <u> </u>        | 180                      |  |  |
| Direct Background reading (4)             | 4               | 180                      |  |  |
| Direct Background reading (5)             | ij              | 168                      |  |  |
| Direct Background reading (AVERAGE)       | . 5             | 174                      |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%             | 11 %                     |  |  |
| MID-DAY SOURCE READING                    | 1062            | 1423                     |  |  |
| MID-DAY BACKGROUND READING                | 3               | 154                      |  |  |
| EVENING SOURCE READING                    | 1089            | 1426                     |  |  |
| EVENING BACKGROUND READING                | 4               | 139                      |  |  |
| Morning check performed by                | Rm 67° 5.       | mny 7:30a                |  |  |
| Mid-day check performed by (300           | JAK Sunny Ke 74 | PF                       |  |  |
| Afternoon check performed by              | KIK             |                          |  |  |

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| DATE: 7-29-61                              | PAGE 43 of 52 |              |                                       |        |
|--------------------------------------------|---------------|--------------|---------------------------------------|--------|
| Source                                     | Th-           | 230          | Tc-99                                 |        |
| O-libertien Dete                           | Alpha         | Beta         | Alpha                                 | Beta   |
| Calibration Date                           | 5/30/         | /2001        | 6/4/                                  | 1999   |
| Serial Number                              | 11/29         | 1803         | 184                                   | 3-94   |
| Source emission rate                       | 88            | 80           | 11                                    | 100    |
| Instrument Channel                         | N             | /A           | N                                     | /A     |
| High Voltage                               |               | (            | 0.62KV                                |        |
| Battery Check                              |               | (            | OK                                    |        |
| Source Check Reading (1)                   | 1021          |              | · · · · · · · · · · · · · · · · · · · | 1416   |
| Source Check Reading (2)                   | 1083          |              |                                       | 1467   |
| Source Check Reading (3)                   | 1061          | , X          | /                                     | 1415   |
| Source Check Reading (4)                   | 1060          | Y            |                                       | 1389   |
| Source Check Reading (5)                   | 1116          |              |                                       | 1376   |
| Source Check Reading (AVERAGE)             | 1068.2        |              |                                       | 1412.6 |
|                                            |               |              |                                       |        |
| Direct Background reading (1)              | 5             | 5            | 16                                    | 1      |
| Direct Background reading (2)              | 2             |              | 161                                   |        |
| Direct Background reading (3)              | D             |              | 178                                   |        |
| Direct Background reading (4)              | 3             | )<br>        | 17                                    | 3      |
| Direct Background reading (5)              | 5             |              | 163                                   | )      |
| Direct Background reading (AVERAGE)        | 3             |              | 168.                                  | 4      |
| Efficiency = (CPM-Background) / DPM * 100  | 11.9          | 9.           | 11,2                                  | %      |
| MID-DAY SOURCE READING                     | 1099          | NA           | NA                                    | 1404   |
| MID-DAY BACKGROUND READING                 |               | 0            | 173                                   |        |
| EVENING SOURCE READING                     | 1044          | NA           | NA                                    | 1425   |
| EVENING BACKGROUND READING                 | 2             |              | 16                                    | 3      |
| Morning check performed by SMK 70° F OT    | 04 SUNI       | ny Lish+     | HAZE                                  |        |
| Mid-day check performed by TK 1225 PC      | 740           | , , <u>,</u> |                                       |        |
| Afternoon check performed by Rom \$:00p 76 | " Over        | cast         |                                       |        |

# A/B Phoswich Serial Number 119803/166008

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| DATE: \$/8/01 PAGE 44 of                  |                        |          |        | 52       |
|-------------------------------------------|------------------------|----------|--------|----------|
| Source                                    | Th-2                   | Th-230   |        | -99      |
|                                           | Alpha                  | Beta     | Alpha  | Beta     |
| Calibration Date                          | 5/30/2                 | 2001     | 6/4/1  | 1999     |
| Out of Cal Date                           | 11/29/                 | 2001     | 6/4/2  | 2000     |
| Serial Number                             | 1198                   | 303      | 184    | 3-94     |
| Source emission rate                      | 888                    | 30       | 11     | 100      |
| Instrument Channel                        | N/.                    | A        | N      | /A       |
| High Voltage                              |                        | 0.65     |        |          |
| Battery Check                             |                        | ole      |        |          |
| Source Check Reading (1)                  | 1022                   | /        |        | 1448     |
| Source Check Reading (2)                  | 1024                   | · pm/    | pom/   | 1398     |
| Source Check Reading (3)                  | 1032                   |          |        | 1402     |
| Source Check Reading (4)                  | 1020                   | 1        |        | 1383     |
| Source Check Reading (5)                  | 1109                   | /        | /      | 1431     |
| Source Check Reading (AVERAGE)            | 1041                   | /        | / R    | 141      |
| 1                                         |                        |          |        |          |
| Direct Background reading (1)             | 7                      | 7        | 15     | 4        |
| Direct Background reading (2)             | 4                      | /        | 144    |          |
| Direct Background reading (3)             | 2                      | -        | 165    |          |
| Direct Background reading (4)             | 5                      |          | 176    |          |
| Direct Background reading (5)             | 5                      |          | 159    |          |
| Direct Background reading (AVERAGE)       | . 4,                   | 6        | 160    |          |
| Efficiency = (CPM-Background) / DPM * 100 | 12                     | 0%       | 119    | 0        |
| MID-DAY SOURCE READING                    | 1119                   | pm       | pm     | 14125    |
| MID-DAY BACKGROUND READING                | 2                      |          | 16     | 3        |
| EVENING SOURCE READING                    | 1102                   | Rm       | Rm     | 1270     |
| EVENING BACKGROUND READING                | 3                      | 3        | 13     | 4        |
| Morning check performed by                | em 7:                  | YZa hu   | mid 7  | 8° Sunny |
| Mid-day check performed by                | Rom 11:                | 10 a nun | nid Zi | 8° Sunny |
| Afternoon check performed by              | pom 4:30 phunid 84° Su |          |        | 4° SUNH  |

# A/B Phoswich Serial Number 119803/166008

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| DATE: \$/10/01                            |         | PA    | GE 45 of | 52            |  |
|-------------------------------------------|---------|-------|----------|---------------|--|
| Source                                    | Th-2    | 30    | Tc-99    |               |  |
| Collibration Data                         | Alpha   | Beta  | Alpha    | Beta          |  |
| Out of Cal Date                           | 11/29/2 | 2001  | 6/4/1999 |               |  |
| Serial Number                             | 1198    | 03    | 184      | 3-94          |  |
| Source emission rate                      | 888     | 0     | 11       | 100           |  |
| Instrument Channel                        | N/A     |       | N        | I/A           |  |
| High Voltage                              |         |       | ok       | 0.6           |  |
| Battery Check                             |         |       | olc      | 1             |  |
| Source Check Reading (1)                  | 1053    |       | /        | 1369          |  |
| Source Check Reading (2)                  | 1036    |       |          | 1391          |  |
| Source Check Reading (3)                  | 1082    |       | 1        | 1298          |  |
| Source Check Reading (4)                  | 1050    | Y     |          | 1375          |  |
| Source Check Reading (5)                  | 1045    | /     |          | 1367          |  |
| Source Check Reading (AVERAGE)            | 1053    | /     |          | 1360          |  |
|                                           |         |       |          |               |  |
| Direct Background reading (1)             | X 5     |       | B 16     | (             |  |
| Direct Background reading (2)             | 5       |       | 14       | 8             |  |
| Direct Background reading (3)             | 3       |       | 17       | 9             |  |
| Direct Background reading (4)             | 2       |       | 16       | 4             |  |
| Direct Background reading (5)             | 8       |       | 16       | 9             |  |
| Direct Background reading (AVERAGE)       | 4.      | 6     | 16       | 4.2           |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12      | 7/0   | 11       | %             |  |
| MID-DAY SOURCE READING                    | initial | daily | hick p   | erformed      |  |
| MID-DAY BACKGROUND READING                | NA -    | /     | /        | $\rightarrow$ |  |
| EVENING SOURCE READING                    | 1062    | non   | em       | 1309          |  |
| EVENING BACKGROUND READING                | 4       |       | 16       | 56            |  |
| Morning check performed by                | NA      |       |          | $\rightarrow$ |  |
| Mid-day check performed by                | JR4 12  | 245 u | varn hun | mp            |  |
| A financial sector and has                | Pm E.   | 45. 6 | 42 . 1   | c             |  |

## A/B Phoswich Serial Number 119803/166008

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| DATE: 8/12/01                             | PAGE 46 of 52 |        |          |      |  |
|-------------------------------------------|---------------|--------|----------|------|--|
| Source                                    | Th-2          | 230    | Tc-99    |      |  |
|                                           | Alpha         | Beta   | Alpha    | Beta |  |
| Calibration Date                          | 5/30/2        | 2001   | 6/4/1999 |      |  |
| Out of Gal Date                           | 11/29/        | 803    | 6/4/2000 |      |  |
| Source emission rate                      | 88            | 80     | 104      | 100  |  |
| Instrument Channel                        | N/.           | 'A     | N        | I/A  |  |
| High Voltage                              |               | 0.6    |          |      |  |
| Battery Check                             |               | ok     |          |      |  |
| Source Check Reading (1)                  | 1068          |        |          | 1409 |  |
| Source Check Reading (2)                  | 1108          |        |          | 1380 |  |
| Source Check Reading (3)                  | 1049          | ×      | /        | 1395 |  |
| Source Check Reading (4)                  | 1068          | Y'     |          | 1450 |  |
| Source Check Reading (5)                  | 1000          |        |          | 1380 |  |
| Source Check Reading (AVERAGE)            | 1058          |        |          | 1403 |  |
| Direct Background reading (1)             | in            |        | 13       | 12   |  |
| Direct Background reading (2)             | 5             | -      | 167      |      |  |
| Direct Background reading (3)             | 1             |        | 168      |      |  |
| Direct Background reading (4)             | 4             |        | 177      |      |  |
| Direct Background reading (5)             | 4             |        | 173      |      |  |
| Direct Background reading (AVERAGE)       | 4.8           |        | 172      |      |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%           | 0      | 11       | %    |  |
| MID-DAY SOURCE READING                    | 1044          | NA     | NA       | 1418 |  |
| MID-DAY BACKGROUND READING                | 7             |        | 16       | 2    |  |
| EVENING SOURCE READING                    | MAT           | ILCION | INT      | n    |  |
| EVENING BACKGROUND READING                | Not           | VSEV   | 110 1    | 11   |  |
| Morning check performed by                | Jeh           | 0600   | 76°F     |      |  |
| Mid-day check performed by                | JRH           | 1214   | 78°F     |      |  |
| Afternoon check performed by              |               | NA     |          |      |  |

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# A/B Phoswich Serial Number 119803/166008

| A/B Phoswich Serial Number 119803/16600 |  |  |  |  |
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| DATE: \$/14/01                            | PAGE 47 of 5 |                |  |
|-------------------------------------------|--------------|----------------|--|
| Source                                    | Th-230       |                |  |
|                                           | Alpha Beta   | Alpha Beta     |  |
| Calibration Date                          | 5/30/2001    | 6/4/1999       |  |
| Out of Cal Date                           | 11/29/2001   | 6/4/2000       |  |
| Serial Number                             | 8880         | 11100          |  |
| Instrument Channel                        | N/A          | N/A            |  |
| High Voltage                              | 0.65         |                |  |
| Battery Check                             | OK           |                |  |
| Source Check Reading (1)                  | 1060         | 1475           |  |
| Source Check Reading (2)                  | 1092 MA      | pm 1516        |  |
| Source Check Reading (3)                  | 1037         | NA 1554        |  |
| Source Check Reading (4)                  | (038         | 1463           |  |
| Source Check Reading (5)                  | 1284         | 1 1581         |  |
| Source Check Reading (AVERAGE)            | 1062         | 1518           |  |
|                                           |              |                |  |
| Direct Background reading (1)             | ÿ            | 137            |  |
| Direct Background reading (2)             | 3            | 174            |  |
| Direct Background reading (3)             | Z            | 173            |  |
| Direct Background reading (4)             | 5            | 169            |  |
| Direct Background reading (5)             | 7            | 173            |  |
| Direct Background reading (AVERAGE)       | 4.2          | 165            |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%          | 12%            |  |
| MID-DAY SOURCE READING                    | 1245 1238 NA | NA 1395        |  |
| MID-DAY BACKGROUND READING                | Ч            | 151            |  |
| EVENING SOURCE READING                    | MOT KIGA     | a cal pan la   |  |
| EVENING BACKGROUND READING                | NUL USED     | 1 10 FILL - 0. |  |
| Morning check performed by                | Rom 8:25a S  | May 740 humid  |  |
| Mid-day check performed by                | Rom 12:30 5  | cany 76°       |  |
| Afternoon check performed by              | NA           | $\rightarrow$  |  |

| DATE: \$12401                             | PAGE 48 of 52 |                |  |  |
|-------------------------------------------|---------------|----------------|--|--|
| Source                                    | Th-230        | Tc-99          |  |  |
|                                           | Alpha Beta    | Alpha Beta     |  |  |
| Calibration Date                          | 5/30/2001     | 6/4/1999       |  |  |
| Out of Cal Date                           | 11/29/2001    | 6/4/2000       |  |  |
| Serial Number                             | 119803        | 1843-94        |  |  |
| Source emission rate                      | 8880          | 11100          |  |  |
| Instrument Channel                        | N/A           | N/A            |  |  |
| High Voltage                              | 3-65          | •              |  |  |
| Battery Check                             | ok            |                |  |  |
| Source Check Reading (1)                  | 1936          | 1435           |  |  |
| Source Check Reading (2)                  | 1373          | 1349           |  |  |
| Source Check Reading (3)                  | 1048          | 1390           |  |  |
| Source Check Reading (4)                  | 1100          | 1431           |  |  |
| Source Check Reading (5)                  | 1008          | 1396           |  |  |
| Source Check Reading (AVERAGE)            | 1253          | 1400           |  |  |
|                                           |               |                |  |  |
| Direct Background reading (1)             | 4             | 172            |  |  |
| Direct Background reading (2)             | 2             | 155            |  |  |
| Direct Background reading (3)             | 2             | 152            |  |  |
| Direct Background reading (4)             | /             | 158            |  |  |
| Direct Background reading (5)             | 2             | 137            |  |  |
| Direct Background reading (AVERAGE)       | 3.4           | 155            |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12%           | 11%            |  |  |
| MID-DAY SOURCE READING                    | 1036          | - 1376         |  |  |
| MID-DAY BACKGROUND READING                | Ч             | 153            |  |  |
| EVENING SOURCE READING                    | NATI          | TOT IN PN      |  |  |
| EVENING BACKGROUND READING                | 11010         |                |  |  |
| Morning check performed by                | Rom 7:35a 7   | 2° Sunny humid |  |  |
| Mid-day check performed by JRU 1700       | not used in   | pm Rom         |  |  |
| Afternoon check performed by              | 4 _4          | Rom            |  |  |

# A/B Phoswich Serial Number 119803/166008

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| DATE: 8/26 01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PAGE 49 of 52 |         |          |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|----------|---------------|
| Source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Th-230        |         | Tc-99    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Alpha         | Beta    | Alpha    | Beta          |
| Calibration Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5/30/20       | 001     | 6/4/1999 |               |
| Out of Cal Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 11/29/2       | 001     | 6/4/2000 |               |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 11980         | )3      | 184      | 3-94          |
| Source emission rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 8880          | )       | 11       | 100           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | IN/A          |         |          | /A            |
| High Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               | 0.65    |          |               |
| Battery Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               | ok      |          |               |
| Source Check Reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1048          |         |          | 1432          |
| Source Check Reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1041          |         | /        | 1375          |
| Source Check Reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1099          | ,ix     | 1º       | 1382          |
| Source Check Reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1100          | · y     | V        | 1321          |
| Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1057          | /       |          | 1356          |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1069 /        | /       | hi mana  | 1373          |
| A CONTRACTOR OF THE PARTY OF TH |               |         | 1        |               |
| Direct Background reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6             |         | 143      |               |
| Direct Background reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3             |         | 164      |               |
| Direct Background reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5             |         | 178      |               |
| Direct Background reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 62            |         | (81      |               |
| Direct Background reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2             |         | 141      |               |
| Direct Background reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4.4           | 1       | 161.     | 4             |
| Efficiency = (CPM-Background) / DPM * 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 12            | °/0     | 11%      |               |
| MID-DAY SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | daily in is   | hial ch | ok done  | at 1252       |
| MID-DAY BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | NA -          |         |          | $\rightarrow$ |
| EVENING SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1010          | 308     | 436-7    | 1361          |
| EVENING BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               | 6       | 168      |               |
| Morning check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | NA            |         |          |               |
| Mid-day check performed by 5 Readings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | JRH 1         | 252 P   | Suny 7   | F&F           |
| Afternoon check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | KLK           |         |          |               |

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# A/B Phoswich Serial Number 119803/166008

A/B Phoswich Serial Number 119803/166008

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| DATE: 8/27/01                             | PAGE 50 of 52 |          |          |       |
|-------------------------------------------|---------------|----------|----------|-------|
| Source                                    | Th-230 Tc-99  |          |          | c-99  |
|                                           | Alpha         | Beta     | Alpha    | Beta  |
| Calibration Date                          | 5/30          | /2001    | 6/4/1999 |       |
| Out of Cal Date                           | 11/29         | 9/2001   | 6/4/2000 |       |
| Serial Number                             | 119           | 9803     | 184      | 13-94 |
| Source emission rate                      | 88            | 380      | 11       | 100   |
| Instrument Channel                        | N             | I/A      | Ν        | N/A   |
| High Voltage                              |               |          | 9.7      |       |
| Battery Check                             |               |          | OK       |       |
| Source Check Reading (1)                  | 1069          | 299      | 1        | 1415  |
| Source Check Reading (2)                  | :023          | 1304     | Ч.       | 1419  |
| Source Check Reading (3)                  | 1 021         | 142277   | 6        | 1423  |
| Source Check Reading (4)                  | 1073          | 295      | 4        | 1366  |
| Source Check Reading (5)                  | 1033          | 310      | 4        | 1427  |
| Source Check Reading (AVERAGE)            | 1043          | 497      | 3.8      | 1410  |
|                                           | 1             |          |          |       |
| Direct Background reading (1)             |               | 2        | 166      |       |
| Direct Background reading (2)             |               | 1        | 179      |       |
| Direct Background reading (3)             |               | 3        | 172      |       |
| Direct Background reading (4)             |               | 3        | 186      |       |
| Direct Background reading (5)             |               | Ч        | 144      |       |
| Direct Background reading (AVERAGE)       |               | 2.6      | 169.     | 4     |
| Efficiency = (CPM-Background) / DPM * 100 |               | 12%      | 119      | 6     |
| MID-DAY SOURCE READING                    | 1049          | NA       | NA       | 1426  |
| MID-DAY BACKGROUND READING                |               | 4        |          | 43    |
| EVENING SOURCE READING                    | 1072          | 301      | ス        | 1454  |
| EVENING BACKGROUND READING                |               | 3        | . 17     | +7    |
| Morning check performed by                | Int           | 0840     |          |       |
| Mid-day check performed by                | Jet           | 1500     |          |       |
| Afternoon check performed by              | KINC          | KUL 1830 |          |       |

| DATE: 8/28/01                             |                       | PAGE 51 of 52 |                  |       |  |
|-------------------------------------------|-----------------------|---------------|------------------|-------|--|
| Source                                    | Th                    | Th-230        |                  | c-99  |  |
|                                           | Alpha                 | Beta          | Alpha            | Beta  |  |
| Calibration Date                          | 5/30                  | /2001         | 6/4/19 <b>99</b> |       |  |
| Out of Cal Date                           | 11/29                 | 9/2001        | 6/4              | /2000 |  |
| Serial Number                             | 119                   | 9803          | 18               | 43-94 |  |
| Source emission rate                      | 80                    | 880           | 1                | 1100  |  |
|                                           |                       | W/A           |                  | N/A   |  |
| High Voltage                              |                       | 01            | 2                |       |  |
| Battery Check                             |                       | 0.65          |                  |       |  |
| Source Check Reading (1)                  | 1029                  | 324           | 4                | 1388  |  |
| Source Check Reading (2)                  | 1045                  | 302           | 3                | 1468  |  |
| Source Check Reading (3)                  | 1060                  | 281           | 3                | 1472  |  |
| Source Check Reading (4)                  | 1032                  | 2.39          | 3                | 1410  |  |
| Source Check Reading (5)                  | 1041 1005 KIT         | 1302 295      | 5.               | 1465  |  |
| Source Check Reading (AVERAGE)            | 1041                  | 2.98          | 3.6              | 1440  |  |
|                                           | and the second second | 6             |                  |       |  |
| Direct Background reading (1)             |                       | 5             | 162              |       |  |
| Direct Background reading (2)             | 2                     | -             | 162              |       |  |
| Direct Background reading (3)             | - C                   | >             | 152              |       |  |
| Direct Background reading (4)             | 3                     |               | 148              |       |  |
| Direct Background reading (5)             |                       | 1             | 161              |       |  |
| Direct Background reading (AVERAGE)       | . 3.                  | 4             | 157              | -     |  |
| Efficiency = (CPM-Background) / DPM * 100 | 12                    | 20/0          | 12               | °/6   |  |
| MID-DAY SOURCE READING                    | 1034                  | NA            | NA               | 1482  |  |
| MID-DAY BACKGROUND READING                | l                     | 4             |                  | 3     |  |
| EVENING SOURCE READING                    | 1022                  | 335           | 5                | 1417  |  |
| EVENING BACKGROUND READING                |                       | 4             | 15               | ş     |  |
| Morning check performed by                | VRI                   | + 0725        |                  |       |  |
| Mid-day check performed by                | IRI                   | + 1235        | -                |       |  |
| Afternoon check performed by              | RAT                   | IRATIE        |                  |       |  |

# A/B Phoswich Serial Number 119803/166008

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| A/B Phoswich Serial Number | 119803/166008 |
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| DATE: 8/29/01                             |            | PAGE 57 of 52     |
|-------------------------------------------|------------|-------------------|
| Source                                    | Th-230     | Tc-99             |
|                                           | Alpha Be   | ta Alpha Beta     |
| Calibration Date                          | 5/30/2001  | 6/4/1999          |
| Out of Cal Date                           | 11/29/2001 | 6/4/2000          |
| Serial Number                             | 8880       | 11100             |
|                                           | N/A        | N/A               |
| High Voltage                              | 0.6        | 5                 |
| Battery Check                             | ok         |                   |
| Source Check Reading (1)                  | 1050       | 1448              |
| Source Check Reading (2)                  | 1046       | 1413              |
| Source Check Reading (3)                  | 10.55      | 1421              |
| Source Check Reading (4)                  | 1042       | 1415              |
| Source Check Reading (5)                  | 1080       | 1515              |
| Source Check Reading (AVERAGE)            | 1054       | 1442              |
|                                           |            |                   |
| Direct Background reading (1)             | 2          | 160               |
| Direct Background reading (2)             | 4          | 143               |
| Direct Background reading (3)             | 1          | 157               |
| Direct Background reading (4)             | 8          | 171               |
| Direct Background reading (5)             | 2          | 168               |
| Direct Background reading (AVERAGE)       | 3.4        | 159.8             |
| Efficiency = (CPM-Background) / DPM * 100 | 12%        | 12%               |
| MID-DAY SOURCE READING                    | not used i | NAM               |
| MID-DAY BACKGROUND READING                | NA         | $\longrightarrow$ |
| EVENING SOURCE READING                    | not aged   | in pm             |
| EVENING BACKGROUND READING                | NA         | >                 |
| Morning check performed by                | JRH 0900   | Sa Overcast cool  |
| Mid-day check performed by                | NA         |                   |
| Afternoon check performed by              | NA         |                   |

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#### SENECA ARMY DEPOT SEAD-12 RI/FS 06-06-01front

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| Site: Seneca Army Depot       | and the state of the second second |            |           |           |
|-------------------------------|------------------------------------|------------|-----------|-----------|
| Project: SEAD-12              |                                    |            |           |           |
| Team: 1 GREY                  |                                    |            |           |           |
|                               |                                    |            | Page 1 of |           |
| Instrument Type               |                                    | A          | /B        |           |
| AKA                           | Floor Monitor                      |            |           |           |
| Make                          | Ludlum                             |            |           |           |
| Model                         | 3260                               |            |           |           |
| Serial Number                 | 138256                             |            |           |           |
| Calibration Date              | 11/15/2000                         |            |           |           |
| Out of Cal Date               | 11/14/2001                         |            |           |           |
| Probe:                        | Alp                                | Alpha Beta |           |           |
| Make                          |                                    | Luc        | llum      |           |
| Model                         |                                    | 43         | -37       |           |
| Serial Number                 |                                    | 136        | 6498      |           |
| Calibration Date              |                                    | 11/15      | 5/2000    |           |
| Out of Cal Date               |                                    | 11/14      | /2001     |           |
| Source                        | Th-2                               | 230        | T         | c-99      |
|                               | Alpha                              | Beta       | Alpha     | Beta      |
| Calibration Date              | 4/10/2                             | 2001       | 6/4       | /1999     |
| Out of Cal Date               | 3/31/2                             | 2003       | 6/4       | /2000     |
| Serial Number                 | 1841                               | -94        | 103       | 39-92     |
| Source emission rate          | 8880                               | dpm        | 111       | 00dpm     |
| Instrument Channel            | N/.                                | A          | 1         | N/A       |
| initial instrument efficiency | 3.10%                              |            |           | 14.00%    |
| 2 Sigma Range                 | 220-329                            |            |           | 1737-2606 |

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PARSONS MAIN, INC.



| (             | CLIENT<br>SUBJECT                                                                   | DAILY FUN                                                                                                                  | ICTION CHE          | CK                                                                                                      | JOB NO<br>ву <b>ЕКМ</b><br>скр                                                                                                  | SHEET<br>DATE<br>REVISION                      | OF                               |
|---------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------|
| : 30 AI       | M INST                                                                              | RUMENT:<br>S/N:                                                                                                            | FLOOR MONI<br>38256 | TOR MET                                                                                                 | TER 138 2                                                                                                                       | :56                                            |                                  |
|               | BACK                                                                                | GROUND                                                                                                                     | (~, B)              |                                                                                                         |                                                                                                                                 |                                                |                                  |
| First         | 1<br>2<br>3<br>4<br>5<br>5                                                          | 6 / 599 3 / 612 5 / 608 1 / 655 2 / 656 Avg = 3.4                                                                          | Aw(B) = 62          | 6. 1/<br>7. 4/<br>8. 6/<br>9. 5/<br>10 1/                                                               | 642<br>642<br>636                                                                                                               | 11. 5/<br>12. 5/<br>13. 1/<br>14. 5/<br>15. 4/ | 619<br>6984<br>597<br>642<br>602 |
| neas          | Sour                                                                                | CE ola                                                                                                                     | )=1.84 0(1          | 3) = 25.02                                                                                              | Sourcë                                                                                                                          | Ŧ                                              |                                  |
| ( <sup></sup> | <b>T</b> y  <br>S                                                                   | pe: Th-230<br>/N: 1841-                                                                                                    | 94 DNS-9            | )                                                                                                       | Type: -<br>s/N: 1                                                                                                               | Tc-99<br>039192                                | DNS-9                            |
| 000           | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15<br>Av | 27/ 245 252 247 277 277 301 287 287 287 268 268 287 268 287 268 287 268 287 268 287 287 268 287 287 287 287 287 287 287 28 | σ = 17              | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>2<br>3<br>4<br>5<br>11<br>12<br>13<br>14<br>15 | 2189<br>2187<br>2173<br>2139<br>2181<br>2/70<br>2155<br>2173<br>2229<br>2171<br>2102<br>2208<br>2094<br>2252<br>2150<br>Avg= 21 | 72 -=                                          | 47                               |
| ι.            |                                                                                     | J                                                                                                                          | 20 = 34             |                                                                                                         | ·                                                                                                                               | 20 =                                           | 94                               |

| DATE: (0-6-0)                             |        | PAGE of |       |       |  |  |
|-------------------------------------------|--------|---------|-------|-------|--|--|
| Source                                    | Th-2   | 230     | Tc    | -99   |  |  |
|                                           | Alpha  | Beta    | Alpha | Beta  |  |  |
| Calibration Date                          | 11/15/ | 2000    | 11/15 | /2000 |  |  |
| Out of Cal Date                           | 11/14/ | 2001    | 11/14 | /2001 |  |  |
| Serial Number                             | 1382   | 256     | 138   | 256   |  |  |
| Source emission rate                      | 88800  | dpm     | 1110  | 0dpm  |  |  |
|                                           | N//    | A       | N     | V     |  |  |
| High Voltage                              |        |         | ch    | ed    |  |  |
| Battery Check                             |        | < .A    | hon   |       |  |  |
|                                           |        | 1 Fre   | ~     |       |  |  |
| Source Check Reading (2)                  |        | W.      | /     |       |  |  |
| Source Check Reading (3)                  | - Mr.  |         |       |       |  |  |
| Source Check Reading (4)                  |        | /       |       |       |  |  |
| Source Check Reading (5)                  |        |         |       |       |  |  |
| Source Check Reading (AVERAGE)            |        |         |       |       |  |  |
|                                           |        |         |       |       |  |  |
| Direct Background reading (1)             |        |         | C     | hear  |  |  |
| Direct Background reading (2)             |        | /       | fion  | /     |  |  |
| Direct Background reading (3)             |        | -1 Fu   |       |       |  |  |
| Direct Background reading (4)             | Ant    | nn      |       |       |  |  |
| Direct Background reading (5)             | X.     |         |       |       |  |  |
| Direct Background reading (AVERAGE)       |        | -       |       |       |  |  |
| Efficiency = (CPM-Background) / DPM * 100 |        |         |       |       |  |  |
| MID-DAY SOURCE READING                    | 275.9. | 1004    | NA    | 200   |  |  |
| MID-DAY BACKGROUND READING                | JRH 2  | 673     | 3     | 665   |  |  |
| EVENING SOURCE READING                    | -375   | /       | /     | 2208  |  |  |
| EVENING BACKGROUND READING                | 19     | 4/      | 651   |       |  |  |
| Morning check performed by che            | ick    |         |       |       |  |  |
| Alid day aback parformed by (2)71         | OI EKV | M /c    | IRH   |       |  |  |
| wild-day check performed by               |        |         |       |       |  |  |

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#### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

(June 7 MURAING SCIENCE Jost ok JRH PARSONS ENGINEERING SCIENCE

| DATE: (0701                                                                                                                                                                                                                                                                                         |                          | PA                                       |            |                          |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------|------------|--------------------------|--|--|
| Source                                                                                                                                                                                                                                                                                              | TI                       | h-230                                    | T T        | Tc-99                    |  |  |
|                                                                                                                                                                                                                                                                                                     | Alpha                    | Beta                                     | Alpha      | Beta                     |  |  |
| Calibration Date                                                                                                                                                                                                                                                                                    | 11/1                     | 5/2000                                   | 11/15/2000 |                          |  |  |
| Out of Cal Date                                                                                                                                                                                                                                                                                     | 11/1                     | 4/2001                                   | 11/1       | 4/2001                   |  |  |
| Serral Number                                                                                                                                                                                                                                                                                       | 13                       | 38256                                    | 13         | 8256                     |  |  |
| Instrument Channel                                                                                                                                                                                                                                                                                  | 880                      | N/A                                      | 111        | V/A                      |  |  |
| High Voltage                                                                                                                                                                                                                                                                                        | 1.7                      |                                          |            |                          |  |  |
| Battery Check                                                                                                                                                                                                                                                                                       | OK                       |                                          |            |                          |  |  |
| Source Check Reading (1)                                                                                                                                                                                                                                                                            | 258                      | /                                        | 1 /        | 2146                     |  |  |
| Source Check Reading (2)                                                                                                                                                                                                                                                                            | 255                      |                                          |            | 2126                     |  |  |
| Source Check Reading (3)                                                                                                                                                                                                                                                                            | 264                      |                                          |            | 2136                     |  |  |
| Source Check Reading (4)                                                                                                                                                                                                                                                                            | 272                      | /                                        |            | 2098                     |  |  |
| Source Check Reading (5)                                                                                                                                                                                                                                                                            | 273                      | /                                        | /          | 2071                     |  |  |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                      | 264.4                    |                                          | /          | 2115.4                   |  |  |
|                                                                                                                                                                                                                                                                                                     |                          |                                          |            |                          |  |  |
| Direct Background reading (1)                                                                                                                                                                                                                                                                       | 5                        | (558-                                    | ~ 619 2ª   | reading                  |  |  |
| Direct Background reading (2)                                                                                                                                                                                                                                                                       | 5                        | 378                                      |            | /                        |  |  |
| Direct Background reading (3)                                                                                                                                                                                                                                                                       | 2                        | 606                                      |            | X                        |  |  |
| Diroct Duorigiouriu rouding (0)                                                                                                                                                                                                                                                                     |                          |                                          | /          |                          |  |  |
| Direct Background reading (4)                                                                                                                                                                                                                                                                       | 3                        | 581                                      | /          |                          |  |  |
| Direct Background reading (4)<br>Direct Background reading (5)                                                                                                                                                                                                                                      | 3                        | 581                                      |            |                          |  |  |
| Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)                                                                                                                                                                                               | 3<br>4<br>3.%            | 581<br>591<br>595                        |            |                          |  |  |
| Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100                                                                                                                                                  | 3<br>4<br>3.%            | 581<br>591<br>595                        |            |                          |  |  |
| Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100<br>MID-DAY SOURCE READING                                                                                                                        | 3<br>4<br>3.8<br>286     | 581<br>591<br>595                        |            | 2272                     |  |  |
| Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100<br>MID-DAY SOURCE READING                                                                                                                        | 3<br>4<br>3.8<br>286     | 581<br>591<br>595                        | 50         | 2272<br>88               |  |  |
| Direct Background reading (4) Direct Background reading (5) Direct Background reading (AVERAGE) Efficiency = (CPM-Background) / DPM * 100 MID-DAY SOURCE READING MID-DAY BACKGROUND READING EVENING SOURCE READING                                                                                  | 3<br>4<br>3.8<br>286     | 581<br>591<br>595                        | 50         | 2272<br>88<br>2316       |  |  |
| Direct Background reading (4) Direct Background reading (5) Direct Background reading (AVERAGE) Efficiency = (CPM-Background) / DPM * 100 MID-DAY SOURCE READING MID-DAY BACKGROUND READING EVENING SOURCE READING EVENING BACKGROUND READING                                                       | 3<br>4<br>3.8<br>286     | 581       591       595       3          | 50         | 2272<br>88<br>2316<br>29 |  |  |
| Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100<br>MID-DAY SOURCE READING<br>MID-DAY BACKGROUND READING<br>EVENING SOURCE READING<br>EVENING BACKGROUND READING<br>Morning check performed by    | 3<br>4<br>3.8<br>286<br> | 581<br>591<br>595<br>3<br>4 0900         | 50         | 2272<br>88<br>2316<br>29 |  |  |
| Direct Background reading (4) Direct Background reading (5) Direct Background reading (AVERAGE) Efficiency = (CPM-Background) / DPM * 100 MID-DAY SOURCE READING MID-DAY BACKGROUND READING EVENING SOURCE READING EVENING BACKGROUND READING Morning check performed by Mid-day check performed by | 3<br>4<br>3.8<br>286<br> | 581<br>591<br>595<br>3<br>4 0900<br>1258 | 50         | 2272<br>88<br>2316<br>29 |  |  |

# A/R Floor Monitor Serial Number 138256/136408 TEAM 1 (CREV)

| DATE: 2/8/01                              |       | PAGE   |        |            |       |
|-------------------------------------------|-------|--------|--------|------------|-------|
| Source                                    | Th    | -230   | T      |            |       |
|                                           | Alpha | Beta   | Alpha  | Beta       |       |
| Calibration Date                          | 11/1  | 5/2000 | 11/1   | 11/15/2000 |       |
| Out of Cal Date                           | 11/1  | 4/2001 | 11/1   | 4/2001     |       |
| Serial Number                             | 13    | 8256   | 13     | 8256       | -     |
| Instrument Channel                        | 000   |        | 111    |            | -     |
| High Voltage                              |       | 1.7    |        |            |       |
| Battery Check                             |       | ok     |        |            |       |
| Source Check Reading (1)                  | 247   |        |        | 2073       |       |
| Source Check Reading (2)                  | 252   |        |        | 1960       |       |
| Source Check Reading (3)                  | 256   |        |        | 2050       |       |
| Source Check Reading (4)                  | 212   |        |        | 2065       |       |
| Source Check Reading (5)                  | 246   |        |        | 2029       |       |
| Source Check Reading (AVERAGE)            | 242.6 |        |        | 2035       | bic   |
|                                           |       |        |        |            |       |
| Direct Background reading (1)             | 7     | 541    |        |            |       |
| Direct Background reading (2)             | 2     | 557    |        |            |       |
| Direct Background reading (3)             | 3     | 548    |        |            |       |
| Direct Background reading (4)             | 3     | 571    |        |            |       |
| Direct Background reading (5)             | 6     | 551    |        |            |       |
| Direct Background reading (AVERAGE)       | 4     | 554    |        |            |       |
| Efficiency = (CPM-Background) / DPM * 100 | 2.7   | 7.     | 13.34% |            | ]     |
| MID-DAY SOURCE READING                    | 244   |        | /      | 2126       | But   |
| MID-DAY BACKGROUND READING                |       | 3      | 612    |            |       |
| EVENING SOURCE READING                    | 238   |        | /      | 2215       |       |
| EVENING BACKGROUND READING                |       | 3      | 711    |            | But I |
| Morning check performed by                | DEC   | 0720   |        |            |       |
| Mid-day check performed by                | Dec   | 1230   |        |            |       |
| Afternoon check performed by              | DRG   | 1825   |        |            | 1     |

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|                                           | 11001130230/130 | 490 I EAIVI- | I (GRET)   |             | ٦    |
|-------------------------------------------|-----------------|--------------|------------|-------------|------|
| DATE: 6/9/01                              |                 | PA           | GE of      |             |      |
| Source                                    | Alpha           | -230         |            | -99<br>Roto | -    |
| Calibration Date                          | Aipila<br>11/15 | 5/2000       | 11/15/2000 |             | -    |
| Out of Cal Date                           | 11/14           | 1/2001       | 11/14/2001 |             | 1    |
| Serial Number                             | 138             | 3256         | 138        | 3256        |      |
| Source emission rate                      | 888             | Odpm         | 1110       |             |      |
| Instrument Channel                        | N               | I/A          | N          | I/A         |      |
| High Voltage                              | 1.7             | 1.7 Ku       |            |             |      |
| Battery Check                             | ok              | ok           |            |             |      |
| Source Check Reading (1)                  | #219            | Sto /        | 1 /        | 1975        |      |
| Source Check Reading (2)                  | 254             |              |            | 2211        |      |
| Source Check Reading (3)                  | 215             |              |            | 2163        |      |
| Source Check Reading (4)                  | 249             |              |            | 2136        |      |
| Source Check Reading (5)                  | 261             |              |            | 2042        |      |
| Source Check Reading (AVERAGE)            | 240             |              | /          | ZIIS        |      |
|                                           |                 |              |            |             |      |
| Direct Background reading (1)             | 4               | 518          |            | /           |      |
| Direct Background reading (2)             | 7               | 565          |            |             |      |
| Direct Background reading (3)             | 4               | 547          |            |             |      |
| Direct Background reading (4)             | 6               | 527          | /          |             |      |
| Direct Background reading (5)             | 3               | 524          |            |             |      |
| Direct Background reading (AVERAGE)       | 5               | 536          | /          |             |      |
| Efficiency = (CPM-Background) / DPM * 100 | 2.6             | %            | 14.2       | %           |      |
| MID-DAY SOURCE READING                    | 329             |              |            | 2324        | Bu   |
| MID-DAY BACKGROUND READING                |                 | 4            | 659        | 7           |      |
| EVENING SOURCE READING                    |                 | -            | /          | 2311        |      |
| EVENING BACKGROUND READING                | 365             | 1            | 774        |             | Beet |
| Norning check performed by                | D               | R6 070       | 15         |             |      |
| Mid-day check performed by                | Da              | 26 123       | 5          |             |      |
| Afternoon check performed by              | SIR             | H 164        | D          |             |      |

#### VB Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| A/D FIOOI WORKOF SERIA WURDER             | 130230/130 | 430 TLAW- | T(GRET)  |        |  |
|-------------------------------------------|------------|-----------|----------|--------|--|
| DATE: 6/10/01                             | PAGE of    |           |          |        |  |
| Source                                    | T          | n-230     | T        | Tc-99  |  |
|                                           | Alpha      | Beta      | Alpha    | Beta   |  |
| Calibration Date                          | 11/1       | 5/2000    | 11/1     | 5/2000 |  |
| Out of Cal Date                           | 11/1       | 4/2001    | 11/1.    | 4/2001 |  |
| Serial Number                             | 138256     |           | 13       | 8256   |  |
|                                           | 000        |           | 1110     |        |  |
|                                           |            | IIV       | <u>г</u> | NA     |  |
| Battery Check                             | 01         | 11 6:     |          |        |  |
| Source Check Reading (1)                  | 268        | 1         | 1        | 2200   |  |
| Source Check Reading (2)                  | 276        |           |          | 2127   |  |
| Source Check Reading (3)                  | 293        |           |          | 2134   |  |
| Source Check Reading (4)                  | 270        |           |          | 2157   |  |
| Source Check Reading (5)                  | 287        | /         | 1        | 2131   |  |
| Source Check Reading (AVERAGE)            | 279        | /         |          | 2150   |  |
|                                           |            |           |          |        |  |
| Direct Background reading (1)             | 4          | 498       |          | /      |  |
| Direct Background reading (2)             | 1          | 518       |          | /      |  |
| Direct Background reading (3)             | 2          | 516       | ,        | /      |  |
| Direct Background reading (4)             | 0          | 554       | /        |        |  |
| Direct Background reading (5)             | 4          | 521       | /        |        |  |
| Direct Background reading (AVERAGE)       | Z          | 521       | /        |        |  |
| Efficiency = (CPM-Background) / DPM * 100 | 3.         | 1%        | 14.7%    |        |  |
| MID-DAY SOURCE READING                    | - 387      |           | /        | 2243   |  |
| MID-DAY BACKGROUND READING                |            | 7         | 721      |        |  |
| EVENING SOURCE READING                    | 324        |           | /        | 2318   |  |
| EVENING BACKGROUND READING                |            | 4         | 663      |        |  |
| Morning check performed by                |            | DR6 07    | 50       |        |  |
| Mid-day check performed by                |            | DRG 1225  | 5        |        |  |
| Afternoon check performed by              |            | 1R6 170   | Ø        |        |  |

#### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| A/B FIOOI MOTILOT Serial Nur              | EI 130230/130490 TEAW-I (GRET) |            |  |  |  |
|-------------------------------------------|--------------------------------|------------|--|--|--|
| DATE: 6/11/01                             | 7.000                          | PAGE of    |  |  |  |
| Source                                    | Th-230                         | Tc-99      |  |  |  |
| Calibration Data                          | Alpha Beta                     | Alpha Beta |  |  |  |
| Out of Cal Date                           | 11/15/2000                     | 11/14/2001 |  |  |  |
| Serial Number                             | 138256                         | 138256     |  |  |  |
| Source emission rate                      | 8880dpm                        | 11100dpm   |  |  |  |
| Instrument Channel                        | N/A                            | N/A        |  |  |  |
| High Voltage                              | K. FKJ                         |            |  |  |  |
| Battery Check                             | ok                             |            |  |  |  |
| Source Check Reading (1)                  | 232                            | 1 2128     |  |  |  |
| Source Check Reading (2)                  | 220 /                          | 2198       |  |  |  |
| Source Check Reading (3)                  | 224 /                          | 2110       |  |  |  |
| Source Check Reading (4)                  | 256                            | Z109       |  |  |  |
| Source Check Reading (5)                  | 246                            | / 2179     |  |  |  |
| Source Check Reading (AVERAGE)            | 236 /                          | / 2/45     |  |  |  |
|                                           |                                |            |  |  |  |
| Direct Background reading (1)             | 1                              | 1 615      |  |  |  |
| Direct Background reading (2)             |                                | / 592      |  |  |  |
| Direct Background reading (3)             | 4 /                            | 635        |  |  |  |
| Direct Background reading (4)             |                                | 5.76       |  |  |  |
| Direct Background reading (5)             |                                | 659        |  |  |  |
| Direct Background reading (AVERAGE)       | 2 /                            | 615        |  |  |  |
| Efficiency = (CPM-Background) / DPM * 100 | 2.6                            | 13.8%      |  |  |  |
| MID-DAY SOURCE READING                    | avere 398                      | 2231       |  |  |  |
| MID-DAY BACKGROUND READING                | crement 348 3                  | 621        |  |  |  |
| EVENING SOURCE READING                    | 1 ma 368                       | 2225       |  |  |  |
| EVENING BACKGROUND READING                | " 4                            | 684        |  |  |  |
| Morning check performed by                | Dikb                           | 0755       |  |  |  |
| Mid-day check performed by                | DRG                            | 1210       |  |  |  |
| Afternoon check performed by              | DR6                            | (830       |  |  |  |

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| AVE Floor Monitor Senai Nun               | TIDE 130230/130490 TEAW-1 (GRET) |                  |        |        |  |
|-------------------------------------------|----------------------------------|------------------|--------|--------|--|
| DATE: \$/12/01                            |                                  | PA               | AGE of |        |  |
| Source                                    | Т                                | h-230            | Т      | c-99   |  |
| Collingtion Data                          | Alpha                            | Beta             | Alpha  | Beta   |  |
| Calibration Date                          | 11/                              | 15/2000          | 11/1   | 5/2000 |  |
| Serial Number                             | 1                                | 38256            | 13     | 4/2001 |  |
| Source emission rate                      | 88                               | 80dpm            | 111    | 00dpm  |  |
| Instrument Channel                        |                                  | N/A              |        | N/A    |  |
| High Voltage                              | 4                                | ·7KU             |        |        |  |
| Battery Check                             |                                  | oK               |        |        |  |
| Source Check Reading (1)                  | 223                              |                  | 1      | 2122   |  |
| Source Check Reading (2)                  | 224                              |                  | /      | 2181   |  |
| Source Check Reading (3)                  | 229                              |                  |        | 2134   |  |
| Source Check Reading (4)                  | 230                              |                  | /      | 2180   |  |
| Source Check Reading (5)                  | 219                              | /                | 1/     | 2201   |  |
| Source Check Reading (AVERAGE)            | 225                              | V                | /      | 2164   |  |
|                                           |                                  |                  |        |        |  |
| Direct Background reading (1)             | × 2                              | <sup>3</sup> 584 |        |        |  |
| Direct Background reading (2)             | Z                                | 557              | -      | /      |  |
| Direct Background reading (3)             | 3                                | 581              |        | /      |  |
| Direct Background reading (4)             | 1                                | 569              | 1      | 1      |  |
| Direct Background reading (5)             | 8                                | 560              |        |        |  |
| Direct Background reading (AVERAGE)       | 3                                | 570              | /      |        |  |
| Efficiency = (CPM-Background) / DPM * 100 | 2                                | 2.5%             | 14     | .4 %   |  |
| MID-DAY SOURCE READING 87 Han 2           | righter 356                      |                  |        | 2234   |  |
| MID-DAY BACKGROUND READING                | ir Nicery                        | 3                | 664    |        |  |
| EVENING SOURCE READING                    | 393                              | /                |        | 2315   |  |
| EVENING BACKGROUND READING                | 3                                |                  | 1 707  |        |  |
| Morning check performed by                |                                  | DR6 0            | 05800  |        |  |
| Mid-day check performed by                |                                  | DRG              | 1220   |        |  |
| Afternoon check performed by              |                                  | iry              | 1820   |        |  |

HV: 1.7 Bat:0K

| DATE: 6/13/01                             | G/13/01 PAGE of       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            |     |
|-------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|-----|
| Source                                    | Th-230 Tc-99          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            | c-99       |     |
|                                           | Alpha                 | Beta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Alpha      | Beta       |     |
| Calibration Date                          | 11/15/2000            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 11/1       | 11/15/2000 |     |
| Out of Cal Date                           | 11/1-                 | 4/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11/14/2001 |            | _   |
| Serial Number                             | 13                    | 8256<br>Odom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 13         | 8256       | -   |
|                                           | 000                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            | 1   |
|                                           |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            |     |
| High Voltage                              | lit Ku                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            | -   |
| Battery Check                             |                       | ok                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ,          |            |     |
| Source Check Reading (1)                  | 233                   | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            | 2184       |     |
| Source Check Reading (2)                  | 246                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            | 2156       |     |
| Source Check Reading (3)                  | Z88                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            | 2190       |     |
| Source Check Reading (4)                  | 263                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            | 2134       |     |
| Source Check Reading (5)                  | 246                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | /          | 282080     |     |
| Source Check Reading (AVERAGE)            | 254                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | /          |            |     |
|                                           | and the second second |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            |     |
| Direct Background reading (1)             | α                     | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 595        | ß          |     |
| Direct Background reading (2)             |                       | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 581        |            |     |
| Direct Background reading (3)             |                       | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 632        |            |     |
| Direct Background reading (4)             |                       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 591        |            |     |
| Direct Background reading (5)             |                       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 609        |            |     |
| Direct Background reading (AVERAGE)       |                       | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 602        |            |     |
| Efficiency = (CPM-Background) / DPM * 100 |                       | 4 cms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | X          |            |     |
| MID-DAY SOURCE READING                    | 374                   | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            | 2317       | I F |
| MID-DAY BACKGROUND READING                |                       | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 683        |            |     |
| EVENING SOURCE READING                    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            |     |
| EVENING BACKGROUND READING                |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            |     |
| Morning check performed by                |                       | DRG (                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0180       |            |     |
| Nid-day check performed by                |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            |     |
| A finance check performed by              |                       | And and a state of the state of |            | Sec. 10    |     |

# A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| DATE: -2/18/01 6/19/01                                                                                                                                                                                                                                                                                                                                          | PAGE of                                 |                                        |                                  |                       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------|----------------------------------|-----------------------|--|
| Source                                                                                                                                                                                                                                                                                                                                                          | Т                                       | h-230                                  | Tc-99                            |                       |  |
|                                                                                                                                                                                                                                                                                                                                                                 | Alpha                                   | Beta                                   | Alpha                            | Beta                  |  |
| Calibration Date                                                                                                                                                                                                                                                                                                                                                | 11/1                                    | 15/2000                                | 11/15/2000                       |                       |  |
| Out of Cal Date                                                                                                                                                                                                                                                                                                                                                 | 11/1                                    | 14/2001                                | 11/14/2001                       |                       |  |
| Serial Number                                                                                                                                                                                                                                                                                                                                                   | 88                                      | 80dpm                                  | 138                              | 200<br>Odpm           |  |
| Instrument Channel                                                                                                                                                                                                                                                                                                                                              |                                         | N/A                                    | N                                | A                     |  |
| High Voltage                                                                                                                                                                                                                                                                                                                                                    |                                         | kV                                     |                                  |                       |  |
| Battery Check                                                                                                                                                                                                                                                                                                                                                   |                                         | 01                                     | <                                |                       |  |
| Source Check Reading (1)                                                                                                                                                                                                                                                                                                                                        | 191                                     |                                        |                                  |                       |  |
| Source Check Reading (2)                                                                                                                                                                                                                                                                                                                                        | 190                                     |                                        |                                  |                       |  |
| Source Check Reading (3)                                                                                                                                                                                                                                                                                                                                        | 202                                     |                                        |                                  |                       |  |
| Source Check Reading (4)                                                                                                                                                                                                                                                                                                                                        | 193                                     |                                        |                                  |                       |  |
| Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                        | R 195                                   |                                        |                                  |                       |  |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                  | 194 >                                   | low will<br>recheck at lux             | n                                |                       |  |
|                                                                                                                                                                                                                                                                                                                                                                 |                                         |                                        |                                  | Constant of           |  |
| Direct Background reading (1) $(\mathcal{A}(\beta))$                                                                                                                                                                                                                                                                                                            | - 1                                     | 479                                    |                                  |                       |  |
| Direct Background reading (2)                                                                                                                                                                                                                                                                                                                                   | 3                                       | 502                                    |                                  | /                     |  |
|                                                                                                                                                                                                                                                                                                                                                                 | 1 1                                     | 51.2                                   |                                  | /                     |  |
| Direct Background reading (3)                                                                                                                                                                                                                                                                                                                                   |                                         |                                        |                                  |                       |  |
| Direct Background reading (3)<br>Direct Background reading (4)                                                                                                                                                                                                                                                                                                  | 0                                       | 578                                    |                                  |                       |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)                                                                                                                                                                                                                                                                 | - <u>じ</u><br>                          | 578                                    |                                  | /                     |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)                                                                                                                                                                                                                          | <u>р</u><br>1<br>2<br>4                 | 578<br>547                             |                                  | /                     |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100                                                                                                                                                                             | <u>р</u><br>Ч                           | 578<br>547                             |                                  |                       |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100                                                                                                                                                                             | 1<br>0<br>4<br>391                      | 578<br>547                             |                                  | 2209                  |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100<br>MID-DAY SOURCE READING                                                                                                                                                   | 1<br>0<br>4<br>391                      | 578<br>547<br>3 /                      | 686                              | 2209                  |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100<br>MID-DAY SOURCE READING<br>MID-DAY BACKGROUND READING<br>EVENING SOURCE READING                                                                                           | 1<br>0<br>4<br>391<br>374               | 578<br>547<br>3 (                      | 686                              | 2209                  |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100<br>MID-DAY SOURCE READING<br>MID-DAY BACKGROUND READING<br>EVENING SOURCE READING<br>EVENING BACKGROUND READING                                                             | 1<br>0<br>4<br>391<br>374               | 578<br>547<br>3 /<br>2 ]               | 686                              | 2209                  |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100<br>MID-DAY SOURCE READING<br>MID-DAY BACKGROUND READING<br>EVENING SOURCE READING<br>EVENING BACKGROUND READING<br>Morning check performed by                               | 1<br>0<br>4<br>391<br>374<br>JR4        | 578<br>547<br>3 /<br>2 1<br>0730       | 686<br>727<br>727<br>72°F Warm + | 2209<br>2333          |  |
| Direct Background reading (3)<br>Direct Background reading (4)<br>Direct Background reading (5)<br>Direct Background reading (AVERAGE)<br>Efficiency = (CPM-Background) / DPM * 100<br>MID-DAY SOURCE READING<br>MID-DAY BACKGROUND READING<br>EVENING SOURCE READING<br>EVENING BACKGROUND READING<br>Morning check performed by<br>Mid-day check performed by | 1<br>0<br>4<br>391<br>374<br>JR4<br>JR4 | 578<br>547<br>3/<br>2]<br>0730<br>1230 | 686<br>727<br>72°F Worm +        | 2209<br>2333<br>Muggy |  |

# A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| DATE:                                     |                      | PAGE of    |            |        |  |
|-------------------------------------------|----------------------|------------|------------|--------|--|
| Source                                    | TI                   | Th-230     |            | c-99   |  |
|                                           | Alpha                | Beta       | Alpha      | Beta   |  |
| Calibration Date                          | 11/1                 | 11/15/2000 |            | 5/2000 |  |
| Out of Cal Date                           | 11/1                 | 4/2001     | 11/14/2001 |        |  |
| Serial Number                             | 13                   | 8256       | 13         | 8256   |  |
| Source emission rate                      | 888                  | Budpm      | 1110       | 00dpm  |  |
| Instrument Channel                        |                      | N/A        | ſ          | N/A    |  |
| High Voltage                              |                      | 1.7        |            |        |  |
| Battery Check                             |                      | ok         |            |        |  |
| Source Check Reading (1)                  | 245                  | 1          | 1          | 2023   |  |
| Source Check Reading (2)                  | 210                  |            |            | 2192   |  |
| Source Check Reading (3)                  | 223                  |            | /          | 2081   |  |
| Source Check Reading (4)                  | 248                  | /          |            | 2071   |  |
| Source Check Reading (5)                  | 223                  |            |            | 2149   |  |
| Source Check Reading (AVERAGE)            | 230                  | 1          |            | 2115   |  |
|                                           |                      |            |            |        |  |
| Direct Background reading (1)             | 1                    | 637        |            |        |  |
| Direct Background reading (2)             | 3                    | 627        |            |        |  |
| Direct Background reading (3)             | . 5                  | 629        |            |        |  |
| Direct Background reading (4)             | 4                    | 614        |            |        |  |
| Direct Background reading (5)             | io                   | 578        |            |        |  |
| Direct Background reading (AVERAGE)       |                      |            |            |        |  |
| Efficiency = (CPM-Background) / DPM * 100 |                      |            |            |        |  |
| MID-DAY SOURCE READING                    | 331                  | /          | /          | 2198   |  |
| MID-DAY BACKGROUND READING                |                      | 1 / 66     | 9          |        |  |
| EVENING SOURCE READING                    | 365                  | /          |            | 2211   |  |
| EVENING BACKGROUND READING                | in the second second | 51 64      | 15         |        |  |
| Morning check performed by                | JRI                  | 1 0735     |            |        |  |
| Mid-day check performed by                | Ron                  | 1235       |            |        |  |
| Afternoon check performed by              | Ro                   | m Sizsp    |            |        |  |

# A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| DATE: 6/21/01                             | PAGE of |              |       |         |
|-------------------------------------------|---------|--------------|-------|---------|
| Source                                    | Th      | Th-230       |       |         |
|                                           | Alpha   | Beta         | Alpha | Beta    |
| Calibration Date                          | 11/1    | 5/2000       | 11/1  |         |
| Out of Cal Date                           | 11/1    | 4/2001       | 11/   | 14/2001 |
| Source emission rate                      | 888     | 0dpm         | 111   | 00dpm   |
| Instrument Channel                        | N       | 1/A          | N/A   |         |
| High Voltage                              |         | 1.7          |       |         |
| Battery Check                             |         | o K          |       |         |
| Source Check Reading (1)                  | 296     | $\backslash$ | /     | 2165    |
| Source Check Reading (2)                  | 309     |              | /     | 2232    |
| Source Check Reading (3)                  | 291     |              | /     | 2178    |
| Source Check Reading (4)                  | 265     |              | /     | 2143    |
| Source Check Reading (5)                  | 287     |              |       | 2162    |
| Source Check Reading (AVERAGE)            | 290     | /            |       | 2176    |
|                                           |         |              |       |         |
| Direct Background reading (1)             | 2       | 629          |       |         |
| Direct Background reading (2)             | 2       | 628          |       |         |
| Direct Background reading (3)             | 2       | 655          |       | _       |
| Direct Background reading (4)             | 3       | 631          |       |         |
| Direct Background reading (5)             | 5       | 601          |       |         |
| Direct Background reading (AVERAGE)       | 3       | 628.8        | -     |         |
| Efficiency = (CPM-Background) / DPM * 100 |         |              |       |         |
| MID-DAY SOURCE READING                    | Not     | use in       | AM -  |         |
| MID-DAY BACKGROUND READING                | Not     | used in      | AM    |         |
| EVENING SOURCE READING                    | Kl-F    | 11.1.20      | DAA . |         |
| EVENING BACKGROUND READING                | 1000    | The In       |       | VVVC    |
| Morning check performed by                |         | kks (        | 0730  |         |
| Mid-day check performed by                |         |              |       |         |
| Afternoon check performed by              |         |              |       |         |
|                                           |         |              |       |         |

#### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| DATE: 6/22/01                                                                                                   | PAGE of |        |            |        |  |  |
|-----------------------------------------------------------------------------------------------------------------|---------|--------|------------|--------|--|--|
| Source                                                                                                          | Th-     | 230    | Тс         | -99    |  |  |
|                                                                                                                 | Alpha   | Beta   | Alpha      | Beta   |  |  |
| Calibration Date                                                                                                | 11/15   | 5/2000 | 11/15/2000 |        |  |  |
| Out of Cal Date                                                                                                 | 11/14   | /2001  | 11/14      | 4/2001 |  |  |
|                                                                                                                 | 138     | 3256   | 130        | 8256   |  |  |
|                                                                                                                 | 8880    |        | 1110       |        |  |  |
|                                                                                                                 |         |        |            |        |  |  |
| High Voltage                                                                                                    |         | 1./ k/ |            |        |  |  |
| Battery Check                                                                                                   |         | ok     |            |        |  |  |
| Source Check Reading (1)                                                                                        | 283283  | 1026   | 253 5      | 2246   |  |  |
| Source Check Reading (2)                                                                                        | 27(     | 992    | 5          | 2131   |  |  |
| Source Check Reading (3)                                                                                        | 270     | 1004   | 3          | 2114   |  |  |
| Source Check Reading (4)                                                                                        | 292     | 1008   | 2          | 2156   |  |  |
| Source Check Reading (5)                                                                                        | 250     | 993    | 3          | 2201   |  |  |
| Source Check Reading (AVERAGE)                                                                                  | 279     | 1005   | 3,6        | 2170   |  |  |
| E Contraction of the second |         |        |            |        |  |  |
| Direct Background reading (1)                                                                                   | Z       | 598    |            |        |  |  |
| Direct Background reading (2)                                                                                   | 7       | 649    | -          |        |  |  |
| Direct Background reading (3)                                                                                   | 4       | 604    |            |        |  |  |
| Direct Background reading (4)                                                                                   |         | 696    |            |        |  |  |
| Direct Background reading (5)                                                                                   | 4       | 665    |            |        |  |  |
| Direct Background reading (AVERAGE)                                                                             | 3.6     | 642    |            |        |  |  |
| Efficiency = (CPM-Background) / DPM * 100                                                                       |         |        |            |        |  |  |
| MID-DAY SOURCE READING                                                                                          | 325     | 1014   | 4          | 2309   |  |  |
| MID-DAY BACKGROUND READING                                                                                      |         | 3/7    | 57         |        |  |  |
| EVENING SOURCE READING                                                                                          | ALDE .  | ISCD 1 | N PAA      | left   |  |  |
| EVENING BACKGROUND READING                                                                                      | 1401 (  | 1.69 1 | 1 /01      | 0-01   |  |  |
| Norning check performed by                                                                                      | Rom 7:  | 30a    |            |        |  |  |
| Vid-day check performed by                                                                                      | JRY     | 1227   |            |        |  |  |
| Afternoon check performed by                                                                                    |         |        |            |        |  |  |
|                                                                                                                 |         |        |            |        |  |  |

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# A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

# Purge @ 720

#### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

| DATE: 1/24/01                             | 4 01 PAGE of |        |            |       |
|-------------------------------------------|--------------|--------|------------|-------|
| Source                                    | Th-2         | Tc-99  |            |       |
|                                           | Alpha        | Beta   | Alpha      | Beta  |
| Calibration Date                          | 11/15/       | 2000   | 11/15/2000 |       |
| Out of Cal Date                           | 11/14/       | 2001   | 11/14/2001 |       |
| Serial Number                             | 8880         | dom    | 13         | 00dpm |
| Instrument Channel                        | N/           | A      | N/A        |       |
| High Voltage                              |              |        |            |       |
| Battery Check                             |              | OL     |            |       |
| Source Check Reading (1)                  | 211          | 848 th |            |       |
| Source Check Reading (2)                  | JR4 270      |        |            | 2174  |
| Source Check Reading (3)                  | 241          |        |            | 2078  |
| Source Check Reading (4)                  | 217          |        |            |       |
| Source Check Reading (5)                  | 217          |        |            |       |
| Source Check Reading (AVERAGE)            | 123          |        |            |       |
|                                           |              |        |            |       |
| Direct Background reading (1)             | 5            | 556    |            |       |
| Direct Background reading (2)             | 3            | 551    | _          |       |
| Direct Background reading (3)             | 2            | 581    |            |       |
| Direct Background reading (4)             | 5            | 602    |            |       |
| Direct Background reading (5)             | 2            | 614    |            |       |
| Direct Background reading (AVERAGE)       | 3.4          | 581    | -          |       |
| Efficiency = (CPM-Background) / DPM * 100 |              |        |            | -     |
| MID-DAY SOURCE READING                    |              |        |            |       |
| MID-DAY BACKGROUND READING                |              |        |            |       |
| EVENING SOURCE READING                    |              |        |            |       |
| EVENING BACKGROUND READING                |              |        |            |       |
| Morning check performed by                | AMC          | 750    |            |       |
| Mid-day check performed by                |              |        |            |       |
| Afternoon check performed by              |              |        |            |       |

The morning check was under 2 3; gma, so we let it punge for the morning it redid the 5 count checks. See the west page der for checks of parsons Engineering science KUK

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# A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

| DATE: 6/24/6 PAGE of                      |              |              |             |              |      |  |
|-------------------------------------------|--------------|--------------|-------------|--------------|------|--|
| Source                                    | Th-230 Tc-99 |              |             |              |      |  |
|                                           | Alpha        | Beta         | Alpha       | Beta         |      |  |
| Calibration Date                          | 11/1         | 5/2000       | 11/         | 15/2000      |      |  |
| Out of Cal Date                           | 11/1         | 11/          | _           |              |      |  |
| Serial Number                             | 13           | 8256         | 1:          | 38256        | -    |  |
| Source emission rate                      | 000          |              | 11          |              | -    |  |
| High Voltage                              |              | 1            | 741         |              |      |  |
| Battery Check                             |              | 0            | sk          |              |      |  |
| Source Check Reading (1)                  | 261          | $\square$    | A           | 2128         | _    |  |
| Source Check Reading (2)                  | 254          |              |             | 2137         |      |  |
| Source Check Reading (3)                  | 234          |              |             | 2267         | -    |  |
| Source Check Reading (4)                  | 251          | lice         | KUK         | 2241         |      |  |
| Source Check Reading (5)                  | 240          |              |             | 2035         |      |  |
| Source Check Reading (AVERAGE)            | 248.4        |              |             | 2141,6       |      |  |
|                                           |              |              |             |              |      |  |
| Direct Background reading (1)             |              | 1            | 637         | $\backslash$ | _    |  |
| Direct Background reading (2)             |              | 2            | 648         |              | _    |  |
| Direct Background reading (3)             |              | 1            | 601         | / KUK        |      |  |
| Direct Background reading (4)             | Kuc          | 0            | 658         |              | _    |  |
| Direct Background reading (5)             |              | 3            | 624         |              |      |  |
| Direct Background reading (AVERAGE)       |              | 1.4          | 633.6       |              | Ι    |  |
| Efficiency = (CPM-Background) / DPM * 100 |              |              |             |              |      |  |
| MID-DAY SOURCE READING                    |              |              |             |              |      |  |
| MID-DAY BACKGROUND READING                |              |              | -           |              |      |  |
| EVENING SOURCE READING                    | 291          | 2.6          |             | 2194         | 2191 |  |
| EVENING BACKGROUND READING                | Ч/           | 622          |             |              |      |  |
| Morning check performed by                | KIK          |              |             |              |      |  |
| Mid-day check performed by                | initial a    | lone in thet | r afternesa | L            |      |  |
| Afternoon check performed by              | JRU          | 1525         |             |              |      |  |

| DATE:                                     | PAGE of |           |                 |         |  |
|-------------------------------------------|---------|-----------|-----------------|---------|--|
| Source                                    | T       | h-230     | Tc-99           |         |  |
| Outline Date                              | Alpha   | Beta      | Alpha           | Beta    |  |
| Calibration Date                          | 11/1    | 15/2000   | 11/             | 15/2000 |  |
| Serial Number                             | 13      | 38256     | 1:              | 38256   |  |
| Source emission rate                      | 88      | 80dpm     | 111             | 00dpm   |  |
| Instrument Channel                        |         | N/A       | N/A             |         |  |
| High Voltage                              | 1,      |           |                 |         |  |
| Battery Check                             | 0       | k         |                 | 1       |  |
| Source Check Reading (1)                  | 206     |           | /               | 2123    |  |
| Source Check Reading (2)                  | 243     |           | /               | 2108    |  |
| Source Check Reading (3)                  | 248     |           | $\swarrow$      | 2115    |  |
| Source Check Reading (4)                  | 255     |           |                 | 2096    |  |
| Source Check Reading (5)                  | 236     | /         |                 | 2194    |  |
| Source Check Reading (AVERAGE)            | 250     | /         |                 | 2127    |  |
|                                           |         |           |                 |         |  |
| Direct Background reading (1)             | 0       | 626       |                 |         |  |
| Direct Background reading (2)             | 1       | 602       |                 | /       |  |
| Direct Background reading (3)             | 1       | 574       | $ \rightarrow $ | 1       |  |
| Direct Background reading (4)             | 3       | Se3       | /               | 1       |  |
| Direct Background reading (5)             | 2       | 626       | /               |         |  |
| Direct Background reading (AVERAGE)       |         | 598       | /               |         |  |
| Efficiency = (CPM-Background) / DPM * 100 |         |           | 13.8%.          |         |  |
| MID-DAY SOURCE READING                    | 302     | /         |                 | 2131    |  |
| MID-DAY BACKGROUND READING                |         | 2166      | 2               |         |  |
| EVENING SOURCE READING                    | 357     |           |                 | 2198    |  |
| EVENING BACKGROUND READING                | 1.1.1   | 3 6:      | 33              |         |  |
| Morning check performed by 50 My 65       | ۴ –     | 1 RI 077  | <b>V</b>        |         |  |
| Mid-day check performed by                | _]      | R4 12     | 05              |         |  |
|                                           | b b     | Rom 5:270 |                 |         |  |

### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| Source                                    | Th    | PA0        | Tc-99 |           |  |
|-------------------------------------------|-------|------------|-------|-----------|--|
| Surve                                     | Alpha | Beta       | Alpha | Beta      |  |
| Calibration Date                          | 11/1  | 5/2000     | 11/1  | 5/2000    |  |
| Out of Cal Date                           | 11/1  | 11/14/2001 |       | 4/2001    |  |
| Serial Number                             | 13    | 138256     |       | 8256      |  |
| Source emission rate                      | 888   | 30dpm      | 111   | 00dpm     |  |
| Instrument Channel                        | -     | N/A        |       | N/A       |  |
| High Voltage                              | 1.    | .7         |       |           |  |
| Battery Check                             | 01    | L          |       | 1         |  |
| Source Check Reading (1)                  | 228   |            | /     | -2029 JRH |  |
| Source Check Reading (2)                  | 242   |            | /     | 2078      |  |
| Source Check Reading (3)                  | 266   |            | /     | 2000      |  |
| Source Check Reading (4)                  | 289   |            | 1     | 2057      |  |
| Source Check Reading (5)                  | 234   |            |       | 2131      |  |
| Source Check Reading (AVERAGE)            | 252   |            |       | 2140      |  |
|                                           |       |            |       |           |  |
| Direct Background reading (1)             | 2     | 580        |       |           |  |
| Direct Background reading (2)             | 3     | 600        |       |           |  |
| Direct Background reading (3)             | 2     | 556        |       |           |  |
| Direct Background reading (4)             | 4     | 579        | /     | 1         |  |
| Direct Background reading (5)             | 0     | 580        | /     |           |  |
| Direct Background reading (AVERAGE)       | 2.2   | 579        | /     |           |  |
| Efficiency = (CPM-Background) / DPM * 100 | 2.    | £°1.       | 14    | °/o       |  |
| MID-DAY SOURCE READING                    | 341   | X          | X     | 2247      |  |
| MID-DAY BACKGROUND READING                | 1     | 6/66       | 6     |           |  |
| EVENING SOURCE READING                    | 404   | X,         | X     | 2212      |  |
| EVENING BACKGROUND READING                |       | 4/         | 663   |           |  |
| Morning check performed by                | sry   | 0705       |       |           |  |
| Mid-day check performed by                | < jrú | 1210       |       |           |  |
| Afternoon check performed by              | VRH   | 1744       |       |           |  |

# A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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- Merning check-detector was not fluch againt jog PARSONS ENGINEERING SCIENCE instially - was changed on source check #5 at 1-4 were

|                                           | 111DET 130230/1304 | IDER 130230/130490 TEAWI-1 (GRET) |          |        |  |
|-------------------------------------------|--------------------|-----------------------------------|----------|--------|--|
| DATE: 6/27/01                             |                    | PAGE of                           |          |        |  |
| Source                                    | Th-                | 230                               | Тс       | -99    |  |
| Calibration Data                          | Alpha              | Beta                              | Alpha    | Beta   |  |
| Out of Cal Date                           | 11/13              | 11/14/2001                        |          | 1/2001 |  |
| Serial Number                             | 138                | 138256                            |          | 3256   |  |
| Source emission rate                      | 8880               | )dpm                              | 11100dpm |        |  |
| Instrument Channel                        | N                  | /A                                | N        | /A     |  |
| High Voltage                              |                    | (.7                               |          |        |  |
| Battery Check                             |                    | 02                                | -        |        |  |
| Source Check Reading (1)                  | 277                | 1                                 |          | 2255   |  |
| Source Check Reading (2)                  | 271                |                                   |          | 2195   |  |
| Source Check Reading (3)                  | 261                |                                   |          | 2210   |  |
| Source Check Reading (4)                  | 288                | /                                 |          | 2077   |  |
| Source Check Reading (5)                  | 294                |                                   |          | 2172   |  |
| Source Check Reading (AVERAGE)            | 278                | /                                 |          | 2182   |  |
|                                           |                    |                                   |          |        |  |
| Direct Background reading (1)             | 6                  | 602                               |          | /      |  |
| Direct Background reading (2)             | 6                  | 660                               |          | /      |  |
| Direct Background reading (3)             | 4                  | 595                               |          |        |  |
| Direct Background reading (4)             | 3                  | 599                               |          |        |  |
| Direct Background reading (5)             | 1                  | 615                               | /        |        |  |
| Direct Background reading (AVERAGE)       | 4                  | 614                               | /        |        |  |
| Efficiency = (CPM-Background) / DPM * 100 | 3,0                | 70                                | 14       | 70     |  |
| MID-DAY SOURCE READING                    | 326                |                                   | /        | 2158   |  |
| MID-DAY BACKGROUND READING                | 3 /                | 653                               |          |        |  |
| EVENING SOURCE READING                    | Alat a             | sed in                            | ON       |        |  |
| EVENING BACKGROUND READING                | 1001 0             |                                   | 1 10 1   |        |  |
| Morning check performed by                | kom o              | 7:40 a                            | SVANY 70 | 0°     |  |
| Mid-day check performed by                | pom i              | 2:25 p 5                          | , 78     | 80     |  |
| Afternoon check performed by              |                    |                                   |          |        |  |

| DATE:                                     |          | PAGE of    |         |           |  |  |
|-------------------------------------------|----------|------------|---------|-----------|--|--|
| Source                                    | Th       | 230        | Tc-99   |           |  |  |
|                                           | Alpha    | Beta       | Alpha   | Beta      |  |  |
| Calibration Date                          | 11/1:    | 11/15/2000 |         | 5/2000    |  |  |
| Out of Cal Date                           | 11/14    | 11/14/2001 |         | 4/2001    |  |  |
| Serial Number                             | 130      | Jdom       | 130     | 8256      |  |  |
|                                           | 000      |            | N/A     |           |  |  |
| High Voltage                              |          | 1.7        | kV      |           |  |  |
| Battery Check                             |          | Dr         | 2       |           |  |  |
| Source Check Reading (1)                  | 364      |            |         | 2248      |  |  |
| Source Check Reading (2)                  | 323      |            |         | 2281      |  |  |
| Source Check Reading (3)                  | 3:33     |            |         | 2271      |  |  |
| Source Check Reading (4)                  | 339      |            |         | 2197      |  |  |
| Source Check Reading (5)                  | 334      |            |         | 2225      |  |  |
| Source Check Reading (AVERAGE)            | 338.6    |            |         | 2244.4    |  |  |
|                                           |          |            |         |           |  |  |
| Direct Background reading (1)             |          | 1          | 663     |           |  |  |
| Direct Background reading (2)             |          | 4          | 681     |           |  |  |
| Direct Background reading (3)             |          | 1          | 648     |           |  |  |
| Direct Background reading (4)             |          | ų          | 637     |           |  |  |
| Direct Background reading (5)             |          | Ч          | 637     |           |  |  |
| Direct Background reading (AVERAGE)       |          | 2.8        | 653,2   |           |  |  |
| Efficiency = (CPM-Background) / DPM * 100 |          |            |         |           |  |  |
| MID-DAY SOURCE READING                    | function | chick      | done    |           |  |  |
| MID-DAY BACKGROUND READING                |          | in the     | 1 morna | fternoon. |  |  |
| EVENING SOURCE READING                    | 320      |            | -       | 2264      |  |  |
| EVENING BACKGROUND READING                |          | 4          | 1757    |           |  |  |
| Morning check performed by                | not us   | 1d         |         |           |  |  |
| Mid-day check performed by                | KLK I    | 215 74     | 0/=     |           |  |  |
| Afternoon check performed by              | -JRH     | 1753       |         |           |  |  |

# A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| DATE: 7 16 01                             | PAGE of               |         |         |        |  |
|-------------------------------------------|-----------------------|---------|---------|--------|--|
| Source                                    | Th-                   | 230     | Tc-99   |        |  |
|                                           | Alpha                 | Beta    | Alpha   | Beta   |  |
| Calibration Date                          | 11/15                 | 5/2000  | 11/15   | 5/2000 |  |
| Out of Cal Date                           | 11/14                 | /2001   | 11/14   | /2001  |  |
| Serial Number                             | 138                   | 138256  |         | 3256   |  |
| Source emission rate                      | 0000                  | 8880dpm |         | Uapm   |  |
|                                           | N                     |         |         |        |  |
| Battery Check                             | 01                    |         |         |        |  |
| Source Check Reading (1)                  | 391                   |         | 1 /     | 2259   |  |
| Source Check Reading (2)                  | 360                   |         |         | 2293   |  |
| Source Check Reading (3)                  | 344                   |         | 1       | 22110  |  |
| Source Check Reading (4)                  | 359                   | *       | 1       | 2253   |  |
| Source Check Reading (5)                  | 368                   | _/      |         | 2328   |  |
| Source Check Reading (AVERAGE)            | 365                   | 1       | /       | 2270   |  |
|                                           |                       |         |         |        |  |
| Direct Background reading (1)             |                       | 3       | 679     | /      |  |
| Direct Background reading (2)             |                       | 2       | 778     |        |  |
| Direct Background reading (3)             |                       | 4       | 686     | 1      |  |
| Direct Background reading (4)             | /                     | 5       | 709     | /      |  |
| Direct Background reading (5)             |                       | (       | 711 /   |        |  |
| Direct Background reading (AVERAGE)       |                       | 3       | 713     |        |  |
| Efficiency = (CPM-Background) / DPM * 100 |                       |         |         | 110    |  |
| MID-DAY SOURCE READING                    | 414                   |         |         | 2546   |  |
| MID-DAY BACKGROUND READING                | 31                    | 779     |         |        |  |
| EVENING SOURCE READING                    | NIOT                  | der     |         | DAA    |  |
| EVENING BACKGROUND READING                | 1100                  | VJE     | y IN    | r //(  |  |
| Morning check performed by                | AMI 07                | 40 010  | udy war | 70.5   |  |
| Mid-day check performed by                | Rom 12                | OPP SI  | 114 74  | PF     |  |
| Afternoon check performed by              | NOT USED IN PM - JRI. |         |         |        |  |

# A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| DATE: 714/2 7/13/01                       | PAGE of               |          |         |         |  |  |
|-------------------------------------------|-----------------------|----------|---------|---------|--|--|
| Source                                    | TI                    | n-230    | Tc-99   |         |  |  |
|                                           | Alpha                 | Beta     | Alpha   | Beta    |  |  |
| Calibration Date                          | 11/1                  | 5/2000   | 11/1    | 5/2000  |  |  |
| Out of Cal Date                           | 11/1                  | 4/2001   | 11/1    | 4/2001  |  |  |
| Serial Number                             | 13                    | 38256    | 13      | 8256    |  |  |
| Source emission rate                      | 888                   |          | 111     | 00dpm   |  |  |
|                                           | 11                    |          |         |         |  |  |
| Battery Check                             | 040                   |          |         |         |  |  |
| Source Check Reading (1)                  | 279                   |          |         | 2219    |  |  |
| Source Check Reading (2)                  | 387                   |          |         | 2182    |  |  |
| Source Check Reading (3)                  | 393                   |          |         | 2218    |  |  |
| Source Check Reading (4)                  | 410                   |          |         | 2180    |  |  |
| Source Check Reading (5)                  | 387                   |          |         | 2227    |  |  |
| Source Check Reading (AVERAGE)            |                       |          | 1       |         |  |  |
|                                           |                       | 6.5      |         |         |  |  |
| Direct Background reading (1)             | 0                     | 654      |         |         |  |  |
| Direct Background reading (2)             | 4                     | 644      |         |         |  |  |
| Direct Background reading (3)             | 3                     | 677      |         |         |  |  |
| Direct Background reading (4)             | 2                     | 654      |         |         |  |  |
| Direct Background reading (5)             | 6                     | 689      |         |         |  |  |
| Direct Background reading (AVERAGE)       | 3                     | 664      |         |         |  |  |
| Efficiency = (CPM-Background) / DPM * 100 |                       |          |         |         |  |  |
| MID-DAY SOURCE READING                    |                       |          |         |         |  |  |
| MID-DAY BACKGROUND READING                |                       |          |         |         |  |  |
| EVENING SOURCE READING                    |                       |          |         |         |  |  |
| EVENING BACKGROUND READING                |                       |          |         |         |  |  |
| Morning check performed by                | JRH                   | 0741     | Cool or | vercast |  |  |
| Mid-day check performed by                | myla                  | r change | l . T m | . I day |  |  |
| Afternoon check performed by              | Not used in atternoon |          |         |         |  |  |

A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| DATE: //14/2001                           | PAGE of |            |               |            |  |
|-------------------------------------------|---------|------------|---------------|------------|--|
| Source                                    | Th-230  |            | 1             | c-99       |  |
|                                           | Alpha   | Beta       | Alpha         | Bet        |  |
| Calibration Date                          | 11/     | 11/15/2000 |               | 11/15/2000 |  |
| Out of Cal Date                           | 11/     | 38256      | 11/           | 14/2001    |  |
| Source emission rate                      | 88      | 80dpm      | 111           | 00dpm      |  |
| Instrument Channel                        |         | N/A        |               | N/A        |  |
| High Voltage                              | 1.      | 67         |               |            |  |
| Battery Check                             | 0       | K          | _             |            |  |
| Source Check Reading (1)                  | 326     | )          |               | 2119       |  |
| Source Check Reading (2)                  | 356     |            |               | 2105       |  |
| Source Check Reading (3)                  | 351     |            |               | 2117       |  |
| Source Check Reading (4)                  | 328     |            | Ň             | 2106       |  |
| Source Check Reading (5)                  | 300     | -          | $\lambda_{-}$ | 2070       |  |
| Source Check Reading (AVERAGE)            | 328.2   | 20 cK      | 200K          | 2115,4     |  |
|                                           |         |            | 1.00          |            |  |
| Direct Background reading (1)             | 6       |            |               | 677        |  |
| Direct Background reading (2)             | 4       |            |               | 654        |  |
| Direct Background reading (3)             | 1       |            |               | 622        |  |
| Direct Background reading (4)             | 2       |            |               | 608        |  |
| Direct Background reading (5)             | 4       |            |               | 67-        |  |
| Direct Background reading (AVERAGE)       | 17/5=   | 3,4        | 1             | 452        |  |
| Efficiency = (CPM-Background) / DPM * 100 |         |            |               |            |  |
| MID-DAY SOURCE READING                    |         |            |               |            |  |
| MID-DAY BACKGROUND READING                |         |            |               |            |  |
| EVENING SOURCE READING                    |         |            |               |            |  |
| EVENING BACKGROUND READING                |         |            |               |            |  |
| Morning check performed by                |         |            |               |            |  |
| Mid-day check performed by                |         |            |               |            |  |
| Afternoon check performed by              |         |            |               |            |  |
| Afternoon check performed by              |         |            |               |            |  |

### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

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| DATE:                                     | PAGE of           |       |            |       |
|-------------------------------------------|-------------------|-------|------------|-------|
| Source                                    | Th-230            |       | To         | -99   |
|                                           | Alpha             | Beta  | Alpha      | Beta  |
| Calibration Date                          | 11/15/2000        |       | 11/15/2000 |       |
| Out of Cal Date                           | 11/14             | /2001 | 11/14      | /2001 |
| Serial Number                             | 138               | 256   | 138        | 256   |
| Source emission rate                      | 8880              | dpm   | 1110       | Odpm  |
| Instrument Channel                        | N/                | A     | N          | /A    |
| High Voltage                              |                   |       |            |       |
| Battery Check                             |                   |       |            |       |
| Source Check Reading (1)                  | -                 |       |            |       |
| Source Check Reading (2)                  |                   |       |            |       |
| Source Check Reading (3)                  |                   |       |            |       |
| Source Check Reading (4)                  |                   |       |            |       |
| Source Check Reading (5)                  |                   |       |            |       |
| Source Check Reading (AVERAGE)            |                   |       |            |       |
|                                           |                   |       | _          | - 18  |
| Direct Background reading (1)             |                   |       |            |       |
| Direct Background reading (2)             |                   |       |            |       |
| Direct Background reading (3)             |                   |       |            |       |
| Direct Background reading (4)             |                   |       |            |       |
| Direct Background reading (5)             |                   |       |            |       |
| Direct Background reading (AVERAGE)       |                   |       |            | -     |
| Efficiency = (CPM-Background) / DPM * 100 | -                 |       |            |       |
| MID-DAY SOURCE READING                    |                   |       |            |       |
| MID-DAY BACKGROUND READING                |                   |       |            |       |
| EVENING SOURCE READING                    |                   |       |            |       |
| EVENING BACKGROUND READING                |                   |       |            |       |
| Morning check performed by                |                   |       |            |       |
| Mid-day check performed by                |                   |       |            |       |
| Afternoon check performed by              | and the same same |       |            | -     |

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#### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

| DATE:                                     | PAGE of |        |       |              |  |
|-------------------------------------------|---------|--------|-------|--------------|--|
| Source                                    | Th-     | Th-230 |       | Tc-99        |  |
|                                           | Alpha   | Beta   | Alpha | Beta         |  |
| Calibration Date                          | 11/15   | /2000  | 11/15 | /2000        |  |
| Serial Number                             | 138     | 256    | 138   | 256          |  |
| Source emission rate                      | 8880    | )dpm   | 1110  | 0dpm         |  |
| Instrument Channel                        | N       | /A     | N     | /A           |  |
| High Voltage                              |         |        |       |              |  |
| Battery Check                             |         |        |       |              |  |
| Source Check Reading (1)                  |         |        |       |              |  |
| Source Check Reading (2)                  |         |        |       |              |  |
| Source Check Reading (3)                  |         |        |       |              |  |
| Source Check Reading (4)                  |         |        |       | - contractor |  |
| Source Check Reading (5)                  |         |        |       |              |  |
| Source Check Reading (AVERAGE)            |         |        |       |              |  |
| Shine                                     |         |        |       |              |  |
| Direct Background reading (1)             |         |        |       |              |  |
| Direct Background reading (2)             |         |        |       |              |  |
| Direct Background reading (3)             |         |        |       |              |  |
| Direct Background reading (4)             |         |        |       |              |  |
| Direct Background reading (5)             |         |        |       |              |  |
| Direct Background reading (AVERAGE)       |         |        | _     |              |  |
| Efficiency = (CPM-Background) / DPM * 100 |         |        |       |              |  |
| MID-DAY SOURCE READING                    |         |        |       |              |  |
| MID-DAY BACKGROUND READING                |         |        |       |              |  |
| EVENING SOURCE READING                    |         |        |       |              |  |
| EVENING BACKGROUND READING                |         |        |       |              |  |
| Morning check performed by                |         |        |       |              |  |
| Mid-day check performed by                |         |        |       |              |  |
| Afternoon check performed by              |         |        |       |              |  |

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#### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

| DATE:                                     |                | PAGE of    |       |       |  |  |
|-------------------------------------------|----------------|------------|-------|-------|--|--|
| Source                                    | Th-2           | Th-230     |       | -99   |  |  |
|                                           | Alpha          | Beta       | Alpha | Beta  |  |  |
| Calibration Date                          | 11/15/         | 11/15/2000 |       | /2000 |  |  |
| Out of Cal Date                           | 11/14/         | 2001       | 11/14 | /2001 |  |  |
| Serial Number                             | 1382           | 256        | 138   | 256   |  |  |
| Source emission rate                      | 8880           | apm        | 1110  | Uapm  |  |  |
|                                           | IN/.           | A          | N     | /A    |  |  |
| High Voltage                              |                |            |       |       |  |  |
| Battery Check                             | _              |            |       |       |  |  |
| Source Check Reading (1)                  |                |            |       |       |  |  |
| Source Check Reading (2)                  | _              |            |       |       |  |  |
| Source Check Reading (3)                  | and the second |            |       |       |  |  |
| Source Check Reading (4)                  |                |            |       |       |  |  |
| Source Check Reading (5)                  |                |            |       |       |  |  |
| Source Check Reading (AVERAGE)            |                |            |       |       |  |  |
|                                           |                |            |       |       |  |  |
| Direct Background reading (1)             |                |            |       |       |  |  |
| Direct Background reading (2)             |                |            |       |       |  |  |
| Direct Background reading (3)             |                |            |       |       |  |  |
| Direct Background reading (4)             |                |            |       |       |  |  |
| Direct Background reading (5)             |                |            |       |       |  |  |
| Direct Background reading (AVERAGE)       |                |            |       |       |  |  |
| Efficiency = (CPM-Background) / DPM * 100 |                |            | •     |       |  |  |
| MID-DAY SOURCE READING                    |                |            |       |       |  |  |
|                                           |                |            |       |       |  |  |
| EVENING SOURCE READING                    |                |            |       |       |  |  |
| EVENING BACKGROUND READING                |                | 100 C      |       | _     |  |  |
| Morning check performed by                |                |            |       |       |  |  |
| Mid-day check performed by                |                |            |       |       |  |  |
| Afternoon check performed by              |                |            |       |       |  |  |

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#### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

| A/B Floor Monitor Serial Number           | 138256/136498 TEAM- | T (GREY)   |
|-------------------------------------------|---------------------|------------|
| DATE:                                     | PA                  | .GE of     |
| Source                                    | Th-230              | Tc-99      |
|                                           | Alpha Beta          | Alpha Beta |
| Calibration Date                          | 11/15/2000          | 11/15/2000 |
| Out of Cal Date                           | 11/14/2001          | 11/14/2001 |
| Serial Number                             | 138256              | 138256     |
| Source emission rate                      | 8880apm             | N/A        |
|                                           | IN/A                | IN/A       |
| High Voltage                              |                     |            |
| Battery Check                             |                     |            |
| Source Check Reading (1)                  |                     |            |
| Source Check Reading (2)                  |                     |            |
| Source Check Reading (3)                  |                     |            |
| Source Check Reading (4)                  |                     |            |
| Source Check Reading (5)                  |                     |            |
| Source Check Reading (AVERAGE)            |                     |            |
|                                           |                     |            |
| Direct Background reading (1)             |                     |            |
| Direct Background reading (2)             |                     |            |
| Direct Background reading (3)             |                     |            |
| Direct Background reading (4)             |                     |            |
| Direct Background reading (5)             |                     |            |
| Direct Background reading (AVERAGE)       |                     |            |
| Efficiency = (CPM-Background) / DPM * 100 |                     |            |
| MID-DAY SOURCE READING                    |                     |            |
| MID-DAY BACKGROUND READING                |                     |            |
| EVENING SOURCE READING                    | 4-97 S              |            |
| EVENING BACKGROUND READING                |                     |            |
| Morning check performed by                |                     |            |
| Mid-day check performed by                |                     |            |
| Afternoon check performed by              |                     |            |

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| DATE:                                     | PAGE of |            |            |        |
|-------------------------------------------|---------|------------|------------|--------|
| Source                                    | Th-230  |            | Tc         | -99    |
|                                           | Alpha   | Beta       | Alpha      | Beta   |
| Calibration Date                          | 11/15/  | 11/15/2000 |            | 5/2000 |
| Out of Cal Date                           | 11/14/  | 2001       | 11/14/2001 |        |
| Serial Number                             | 1383    | 256        | 138256     |        |
| Source emission rate                      | 8880    | dpm        | 1110       | 0dpm   |
|                                           | N/.     | A          | N N        |        |
| High Voltage                              |         |            |            |        |
| Battery Check                             |         |            |            |        |
| Source Check Reading (1)                  |         |            |            |        |
| Source Check Reading (2)                  |         |            |            |        |
| Source Check Reading (3)                  |         |            |            |        |
| Source Check Reading (4)                  |         |            |            |        |
| Source Check Reading (5)                  |         |            |            |        |
| Source Check Reading (AVERAGE)            |         |            | -          |        |
|                                           |         |            |            |        |
| Direct Background reading (1)             |         |            |            |        |
| Direct Background reading (2)             | 21      |            |            |        |
| Direct Background reading (3)             |         |            |            |        |
| Direct Background reading (4)             |         |            |            |        |
| Direct Background reading (5)             |         |            |            |        |
| Direct Background reading (AVERAGE)       |         |            |            |        |
| Efficiency = (CPM-Background) / DPM * 100 |         |            |            |        |
| MID-DAY SOURCE READING                    |         |            |            |        |
| MID-DAY BACKGROUND READING                |         |            |            |        |
| EVENING SOURCE READING                    | -       |            |            |        |
| EVENING BACKGROUND READING                | 1       | -          |            |        |
| Morning check performed by                |         |            |            |        |
| Mid-day check performed by                |         |            |            |        |
| Afternoon check performed by              |         |            |            |        |

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### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

| DATE:                                     | PAGE of |            |         |        |
|-------------------------------------------|---------|------------|---------|--------|
| Source                                    | Th-     | Th-230     |         | -99    |
|                                           | Alpha   | Beta       | Alpha   | Beta   |
| Calibration Date                          | 11/15   | 11/15/2000 |         | 5/2000 |
| Out of Cal Date                           | 11/14   | /2001      | 11/14   | /2001  |
| Serial Number                             | 138     | 256        | 138     | 0dpm   |
|                                           | 0000    |            | 1110    |        |
| High Voltage                              |         |            |         |        |
| Battery Check                             |         |            |         |        |
| Source Check Reading (1)                  |         |            |         |        |
| Source Check Reading (2)                  |         |            |         |        |
| Source Check Reading (3)                  |         |            | in much |        |
| Source Check Reading (4)                  |         |            |         |        |
| Source Check Reading (5)                  |         | -          |         |        |
| Source Check Reading (AVERAGE)            |         |            |         |        |
|                                           |         |            | -       |        |
| Direct Background reading (1)             |         |            |         |        |
| Direct Background reading (2)             |         |            |         |        |
| Direct Background reading (3)             |         |            |         |        |
| Direct Background reading (4)             |         |            |         |        |
| Direct Background reading (5)             |         |            |         |        |
| Direct Background reading (AVERAGE)       |         | -          |         |        |
| Efficiency = (CPM-Background) / DPM * 100 |         |            |         |        |
| MID-DAY SOURCE READING                    |         |            |         |        |
| MID-DAY BACKGROUND READING                |         |            |         |        |
| EVENING SOURCE READING                    |         |            |         |        |
| EVENING BACKGROUND READING                |         |            |         |        |
| Morning check performed by                |         |            |         |        |
| Mid-day check performed by                |         |            |         | Call   |
| Afternoon check performed by              |         |            |         |        |

#### A/B Floor Monitor Serial Number 138256/136498 TEAM-1 (GREY)

| Site: Seneca Army Depot       |                     |                  |           |           |  |
|-------------------------------|---------------------|------------------|-----------|-----------|--|
| Project: SEAD-12              |                     |                  |           |           |  |
| Team: 1 GREY                  |                     |                  |           |           |  |
|                               | E. C.               |                  | Page 1 of |           |  |
| Instrument Type               | Constant Providence | F                | VB        |           |  |
| АКА                           |                     | Floor            | Monitor   |           |  |
| Make                          |                     | Luc              | dlum      |           |  |
| Model                         |                     | 3:               | 260       |           |  |
| Serial Number                 |                     | 138              | 3256      |           |  |
| Calibration Date              |                     | 11/1             | 5/2000    |           |  |
| Out of Cal Date               |                     | 11/14            | 4/2001    |           |  |
| Probe:                        | Al                  | oha              | E         | Beta      |  |
| Make                          |                     | Ludium           |           |           |  |
| Model                         |                     | 43-37            |           |           |  |
| Serial Number                 |                     | 136498           |           |           |  |
| Calibration Date              |                     | 11/15/2000       |           |           |  |
| Out of Cal Date               |                     | 11/14            | 1/2001    |           |  |
| Source                        | Th-                 | 230              | Tc-99     |           |  |
|                               | Alpha               | Beta             | Alpha     | Beta      |  |
| Calibration Date              | 4/10/               | /2001            | 6/4       | /1999     |  |
| Out of Cal Date               | 3/31/               | /2003            | 6/4       | /2000     |  |
| Serial Number                 | 184                 | 1841-94 1039-92  |           | 39-92     |  |
| Source emission rate          | 8880                | 8880dpm 11100dpm |           | 00dpm     |  |
| Instrument Channel            | N                   | /A               | 1         | N/A       |  |
| initial instrument efficiency | 3.70%               |                  |           | 14.00%    |  |
| 2 Sigma Range                 | 233-432             |                  |           | 2111-2302 |  |

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PARSONS MAIN, INC.

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| LIENT  |             |          |          |        |           | JOB NO                                  | SHEET OF      |
|--------|-------------|----------|----------|--------|-----------|-----------------------------------------|---------------|
| UBJECT | FUNCTION    | CHECK -  | END OF   | DAY    |           | BY                                      | DATE 6/12/01  |
| Weath  | er - overca | 14. 70 ( | legress, | hunid  |           | CKD                                     | REVISION      |
|        | Instrument  | : Floor  | Mointer  | 138 25 | 6/136498  | e All u                                 | rits are cp.M |
|        | Th-230      | 1841-9   | પ        |        | Tc-99     | (039-92                                 |               |
| 1      | 308         | 1723     | TIME     | 1      | 368 (04)  | 2219 1                                  | 744 TIME      |
| 2      | 357         |          |          | 2      | 2166      |                                         |               |
| 3      | 327         |          |          | 3      | 2240      |                                         |               |
| ч      | 320         |          |          | ч      | 2223      |                                         |               |
| 5      | 322         |          |          | 5      | 2239      |                                         |               |
| 4      | 307         | 1729     |          | G      | 2226      |                                         |               |
| 1      | 374         |          |          | 1      | 2203      |                                         |               |
| 8      | 378         |          |          | g      | 2285      |                                         |               |
| 9      | 360         |          |          | 9      | 1233      |                                         |               |
| 10     | 352         |          |          | 10     | 2140      |                                         |               |
| 11     | 128         | 1737     |          | el     | 2193      | i75                                     | 6             |
| 12     | 332         |          |          | 12     | 2216      |                                         |               |
| 13     | 3.58        |          |          | 13     | 2188      |                                         |               |
| 14     | 338         |          |          | 14     | 2264      |                                         |               |
| 15     | 368         | 1743     |          | 15     | 2233      |                                         |               |
| Bickey | round O     | 1B       |          |        |           |                                         |               |
| 1      | 2/658       | - 1801   | 2 TIME   |        |           |                                         |               |
| 2      | 4/66        | 9        |          |        |           |                                         |               |
| 3      | 5/66        | 0        |          |        | Average ( | Th-23c) · 3                             | 42            |
| 4      | 4/634       | ł        |          |        |           | 5:18                                    | .5            |
| 5      | 2/616       | 180      | 7.       |        |           |                                         |               |
| 6      | 4/47        | 5        |          |        | Average ( | Tc-99): 2                               | 1218          |
| 7      | 3 / 67      | 29       |          |        |           | 6 : 4                                   | +             |
| 8      | 3/68        | Û        |          | ,      | Average ( | $(\underline{k} + \underline{\beta})$ : |               |
| 9      | 3/66        | 4        |          |        |           | <i>G</i>                                |               |
| 10     | 0 3/655     | 5        |          |        |           |                                         |               |
| 11     | 7/67        | 7        |          |        | Average   | background (c                           | *1=4.13       |
| 12     | 1/65        | 1 1815   | 5        |        |           | -                                       | 0 = 2         |
| 13     | 3 12/68     | 0        |          |        | Average   | background (                            | (3) = 659     |
| 14     | 4/60        | 6        |          |        | I         | (                                       | 5 = 26        |
| 15     | 5 5168      | 24 1     | 619      |        |           |                                         |               |

PARSONS MAIN, INC.

## PARSONS

| CLIENT                          | JOB NO                 | SHEET OF    |
|---------------------------------|------------------------|-------------|
| SUBJECT FUNCTION CHECK - M      | <u>Ч.О.)). А. Ү</u> ВҮ | DATE6/12/01 |
| weather mostly Cloudy, 70 deg   | rees himid. CKD.       | REVISION    |
| Instrument : Floor Maniter      | 138256 / 136498        |             |
| Thorican 250 1841-94            | Tc 1039-92             |             |
| 0 367 cpm 1236                  | O 2199 epm 1.          | 310         |
| (2) 379 cpm 12:38               | Q 2221 cpm             |             |
| (3) 358 cpm 12:39               | 3 2324 cpm             |             |
| () 373 cgm 12:41                | (4) 2243 cpm           |             |
| (5) 407 cpm 1242                | (5) 2300 cpm           | ~           |
| © 364 cpm 1244                  | 6 2149 cpm 131         | ₹           |
| (7) 347 cm 1245                 | 7 7179 cpm             |             |
| (B) 370 gm 1247                 | 8 Z280 cpm             |             |
| (9) 378 cpm 1249                | 2188 Cpm               | <b>N</b>    |
| (6) 419 cpm 1300                | © ZZ19 cpm 13          | 23          |
| () 391 cpm 1301                 | (1) 2277 Cgm           |             |
| (1) 370 cpm 1303                | 2 2185 Cpm             |             |
| (1) 510 cpm 1305                | (13) 2250 Gpm          |             |
| (14) 581 cpm 1506               | (1) 2192 Gm            |             |
| (5) 420 ym 1507                 | (b) 22(4 Gm            |             |
| the SOL cpm                     | HUC: LLSZ ipm          |             |
| R. Kass of B                    |                        |             |
| 0 7/00 1321                     |                        |             |
| 0 2/660 1551                    | (1) 1/657              |             |
| (1) $(1)$ $(2)$                 | (1) 4/697              |             |
| 4 616                           | (4) $4/672$            |             |
| (i) 4 / (cHo                    | 1 4/685                |             |
| (a) = 1 (-38) = 133(a)          | Aux : 35/673           |             |
| 7 3/ 679                        |                        |             |
| (3) $(a)$ $(a)$                 |                        |             |
| (G) $(H)$ $(G)$                 |                        |             |
| $(i) = (\exists a) \qquad i343$ |                        |             |
|                                 |                        |             |

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| Site: Seneca Army Depot |                                                                                                                |
|-------------------------|----------------------------------------------------------------------------------------------------------------|
| Project: SEAD-12        |                                                                                                                |
| Team: 2 BLACK           |                                                                                                                |
|                         | Page 1 of 8                                                                                                    |
| Instrument Type         | Micro-Rem                                                                                                      |
| AKA                     | alater and a second |
| Make                    | Bicron                                                                                                         |
| Model                   | Micro-Rem                                                                                                      |
| Serial Number           | C252A                                                                                                          |
| Calibration Date        | 3/20/2001                                                                                                      |
| Out of Cal Date         | 9/16/2001                                                                                                      |
| Probe                   | 1                                                                                                              |
| Make                    | N/A                                                                                                            |
| Model                   | N/A                                                                                                            |
| Serial Number           | N/A                                                                                                            |
| Calibration Date        | N/A                                                                                                            |
| Out of Cal Date         | N/A                                                                                                            |
| Source                  | Cs-137                                                                                                         |
| Source type             | Gamma                                                                                                          |
| Calibration Date        | 4/10/2001                                                                                                      |
| Out of Cal Date         | 3/31/2003                                                                                                      |
| Serial Number           | 1845-94                                                                                                        |
| Source emission rate    | 1768566dpm                                                                                                     |
| Instrument Channel      | N/A                                                                                                            |
| 2 Sigma Range           | 441-662                                                                                                        |

PARSONS MAIN, INC.

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PARSONS \_\_\_ OF\_\_\_\_\_ JOB NO. \_\_\_\_\_ SHEET\_2 BY JRIT DATE 6/4/01 NITIAL FUNCTION CHECK

REVISION CKD.\_\_\_\_ (ZIN 11: 30 AM - Background INSTRUMENT: MICRO-REM. BATTERY : OK HV: OK 5/N : C252A 6/5/01 TYPE: CS-137 . 1 BACKGROUND SOURCE 5/N: 1845-94 9:00AM 5 35 source theck 30 ١ 600 2 6 2 500 25 rectioned 3 7 w/ propert 3 550 5 Floor 4 ч 30 550 gran etri 5 5 5 525 BO Ø 6 Ç 0 550 64 7 3 7 500 ۶ 8 550 9 7 550 9 3 5 10 10 600 30 11 550 6 WALL ιI 5 30 12 12 (xV) 550 4 30 13 13 5 30 600 14 14 4/ 30 15 15 500 Avg= 30.3 Avg: 5.3 5.51 J = -- 2.31 Time : 6/5/01 Date : 9:00 AM 6/5/01 Bat ok BACKGROUND 9:00 Am HU OK SN: C252A ナッシュ キ しろ J ろ ろ J 1 2 3 45678

Avg= 3.8 95

## MICRO-REM Serial Number C252A TEAM-1 (GREY)

| DATE: 66601 0910                         | PAGE 3 OF 8                |  |  |
|------------------------------------------|----------------------------|--|--|
| Source                                   | Cs-137                     |  |  |
| Calibration Date                         | 3/20/2001                  |  |  |
| Serial Number                            | C252A                      |  |  |
| Instrument Channel                       | N/A                        |  |  |
| High Voltage                             | OK                         |  |  |
| Battery Check                            | OK                         |  |  |
| Source Check Reading (1)                 | initial function checkdone |  |  |
| Source Check Reading (2)                 |                            |  |  |
| Source Check Reading (3)                 |                            |  |  |
| Source Check Reading (4)                 | KUK                        |  |  |
| Source Check Reading (5)                 |                            |  |  |
| Source Check Reading (AVERAGE)           |                            |  |  |
| Material:                                |                            |  |  |
| Material Background reading SCANNING     | KINA                       |  |  |
| FLAG (= 2X Material Background) SCANNING |                            |  |  |
|                                          | T T                        |  |  |
| Direct Background reading (1)            | 2                          |  |  |
| Direct Background reading (2)            | <u> </u>                   |  |  |
| Direct Background reading (3)            | 4                          |  |  |
| Direct Background reading (4)            | 3                          |  |  |
| Direct Background reading (5)            | 3                          |  |  |
| Direct Background reading (AVERAGE)      | 4                          |  |  |
|                                          |                            |  |  |
| MID-DAY SOURCE READING                   | not used in morn.          |  |  |
| MID-DAY BACKGROUND READING               | not used in morning        |  |  |
| EVENING SOURCE READING                   | 550                        |  |  |
| EVENING BACKGROUND READING               | 5                          |  |  |
| Morning check performed by               | KUK -MAAPU                 |  |  |
| Mid-day check performed by               | NA                         |  |  |
| Evening check performed by               | Ellen                      |  |  |

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MICRO-REM Serial Number C252A TEAM-1 (GREY)

| DATE: @[커]이                               | PAGE 4 OF 8         |  |  |
|-------------------------------------------|---------------------|--|--|
| Source                                    | Cs-137<br>3/20/2001 |  |  |
| Out of Cal Date                           | 9/16/2001           |  |  |
| Serial Number                             | C252A               |  |  |
| Instrument Channel                        | N/A                 |  |  |
| High Voltage                              | 01                  |  |  |
| Battery Check                             | OK                  |  |  |
| Source Check Reading (1)                  | 600                 |  |  |
| Source Check Reading (2)                  | 600                 |  |  |
| Source Check Reading (3)                  | 550                 |  |  |
| Source Check Reading (4)                  | 600                 |  |  |
| Source Check Reading (5)                  | 600                 |  |  |
| Source Check Reading (AVERAGE)            | 590                 |  |  |
| Material:                                 |                     |  |  |
| Material Background reading SCANNING      | Kill                |  |  |
| FLAG ( = 2X Material Background) SCANNING |                     |  |  |
| Direct Background reading (1)             | 7                   |  |  |
| Direct Background reading (2)             | 5                   |  |  |
| Direct Background reading (3)             | 5                   |  |  |
| Direct Background reading (4)             | 6                   |  |  |
| Direct Background reading (5)             | 6                   |  |  |
| Direct Background reading (AVERAGE)       | b                   |  |  |
|                                           |                     |  |  |
| MID-DAY SOURCE READING                    | 450                 |  |  |
| MID-DAY BACKGROUND READING                | 4                   |  |  |
| EVENING SOURCE READING                    | 500                 |  |  |
| EVENING BACKGROUND READING                | 5                   |  |  |
| Morning check performed by                | EKM                 |  |  |
| Mid-day check performed by                | EKM                 |  |  |
| Evening check performed by                | ELM                 |  |  |

6:30 pm

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(<sup>2</sup>).

## MICRO-REM Serial Number C252A TEAM-1 (GREY)

| DATE: 6/8/01                              | PAGE 5 OF                     |
|-------------------------------------------|-------------------------------|
| Source                                    | Cs=137                        |
| Calibration Date                          | <u>3/20/2001</u><br>9/16/2001 |
| Serial Number                             | C252A                         |
| Instrument Channel                        | N/A                           |
| High Voltage                              | OK                            |
| Battery Check                             | or                            |
| Source Check Reading (1)                  | 600                           |
| Source Check Reading (2)                  | (000)                         |
| Source Check Reading (3)                  | 600                           |
| Source Check Reading (4)                  | 600                           |
| Source Check Reading (5)                  | 600                           |
| Source Check Reading (AVERAGE)            | 600                           |
| Material:                                 |                               |
| Material Background reading SCANNING      | int                           |
| FLAG ( = 2X Material Background) SCANNING | Pre                           |
| Direct Background reading (1)             | Ø                             |
| Direct Background reading (2)             | 7                             |
| Direct Background reading (3)             | G                             |
| Direct Background reading (4)             | Ц                             |
| Direct Background reading (5)             | Ţ.                            |
| Direct Background reading (AVERAGE)       | 6                             |
|                                           |                               |
| MID-DAY SOURCE READING                    | AG                            |
| MID-DAY BACKGROUND READING                | 4 500                         |
| EVENING SOURCE READING                    | 600                           |
| EVENING BACKGROUND READING                | 6                             |
| Morning check performed by                | KIK                           |
| Mid-day check performed by                | K1K 1220                      |
| Evening check performed by                | ERM 1830                      |

| DATE: 6 (? (0 (                           | PAGE 6 OF    |
|-------------------------------------------|--------------|
| Source                                    | Cs=137       |
| Calibration Date                          | 3/20/2001    |
| Serial Number                             | C252A        |
| Instrument Channel                        | N/A          |
| High Voltage                              | OK           |
| Battery Check                             | ok           |
| Source Check Reading (1)                  | 550          |
| Source Check Reading (2)                  | 550          |
| Source Check Reading (3)                  | 550          |
| Source Check Reading (4)                  | 600          |
| Source Check Reading (5)                  | 550          |
| Source Check Reading (AVERAGE)            | 560 00       |
| Material:                                 |              |
| Material Background reading SCANNING      | KIK          |
| FLAG ( = 2X Material Background) SCANNING |              |
|                                           | <i>(</i> -   |
| Direct Background reading (1)             | <u>@</u>     |
| Direct Background reading (2)             | 5            |
| Direct Background reading (3)             | 4            |
| Direct Background reading (4)             | 5            |
| Direct Background reading (5)             | 6            |
| Direct Background reading (AVERAGE)       | 5.2          |
|                                           |              |
| MID-DAY SOURCE READING                    | rik - 450    |
| MID-DAY BACKGROUND READING                | KUK AT 5 Jul |
| EVENING SOURCE READING                    | 550          |
| EVENING BACKGROUND READING                | 5            |
| Morning check performed by                | jlu 0738     |
| Mid-day check performed by                | JRH 1252     |
| Evening check performed by                | EKM 1640     |

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## MICRO-REM Serial Number C252A TEAM-1 (GREY)

## MICRO-REM Serial Number C252A TEAM-1 (GREY)

| DATE: 6/10/01                             | PAGE FOF &     |
|-------------------------------------------|----------------|
| Source                                    | Cs-137         |
| Calibration Date                          | 3/20/2001      |
| Serial Number                             | C252A          |
| Instrument Channel                        | N/A            |
| High Voltage                              | olL            |
| Battery Check                             | OK             |
| Source Check Reading (1)                  | 600            |
| Source Check Reading (2)                  | 600            |
| Source Check Reading (3)                  | 600            |
| Source Check Reading (4)                  | 550            |
| Source Check Reading (5)                  | 550            |
| Source Check Reading (AVERAGE)            | 580            |
| Material:                                 |                |
| Material Background reading SCANNING      | KIK            |
| FLAG ( = 2X Material Background) SCANNING |                |
| Direct Background reading (1)             | 7              |
| Direct Background reading (2)             | 4              |
| Direct Background reading (3)             | 4              |
| Direct Background reading (4)             | 6              |
| Direct Background reading (5)             | 4              |
| Direct Background reading (AVERAGE)       | 5              |
|                                           |                |
| MID-DAY SOURCE READING                    | 550            |
| MID-DAY BACKGROUND READING                | 5              |
| EVENING SOURCE READING                    | not used in PM |
| EVENING BACKGROUND READING                | NA             |
| Morning check performed by                | EKM            |
| Mid-day check performed by                | EKM            |
| Evening check performed by                | Not used in PM |

## MICRO-REM Serial Number C252A TEAM-1 (GREY)

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| DATE: 4 11 01                             | PAGE 8 OF        |
|-------------------------------------------|------------------|
| Source                                    | Cs-137           |
| Calibration Date                          | 9/16/2001        |
| Serial Number                             | C252A            |
| Instrument Channel                        | N/A              |
| High Voltage                              | oK               |
| Battery Check                             | OK               |
| Source Check Reading (1)                  | 600              |
| Source Check Reading (2)                  | 650              |
| Source Check Reading (3)                  | 600              |
| Source Check Reading (4)                  | 650              |
| Source Check Reading (5)                  | 650              |
| Source Check Reading (AVERAGE)            | 630              |
| Material:                                 |                  |
| Material Background reading SCANNING      | FUL              |
| FLAG ( = 2X Material Background) SCANNING |                  |
| Direct Background reading (1)             | 6                |
| Direct Background reading (2)             | 6                |
| Direct Background reading (3)             | 7                |
| Direct Background reading (4)             | 5                |
| Direct Background reading (5)             | 5                |
| Direct Background reading (AVERAGE)       | 6                |
|                                           | 414              |
| MID-DAY SOURCE READING                    | IVA              |
|                                           | 114              |
|                                           | N/A              |
| EVENING BACKGROUND READING                |                  |
| Morning check performed by                | GIUM             |
| Mid-day check performed by                | Not used in Airi |
| Evening check performed by                | Not used in PM   |

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| Site: Seneca Army Depot          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project: SEAD-12                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Team: 2 BLACK                    | A Contraction of the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  | Page 1 of 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Instrument Type                  | Micro-Rem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| AKA                              | And a second sec |
| Make                             | Bicron                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Model                            | Micro-Rem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Serial Number                    | C251A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Calibration Date                 | 3/20/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Out of Cal Date                  | 9/16/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Probe                            | الماني من ا<br>الماني إلى المان من الماني من ال                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Make                             | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Model                            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Serial Number                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Calibration Date                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Out of Cal Date                  | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Source and a state of the second | Cs-137                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source type                      | Gamma                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Calibration Date                 | 4/10/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Out of Cal Date                  | 3/31/2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Serial Number                    | 1845-94                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Source emission rate             | 1768566dpm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Instrument Channel               | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| inst. Efficency                  | 0.02%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2 Sigma Range                    | 277-416                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

PARSONS MAIN, INC.

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OF 48 SHEET\_2 JOB NO. CLIENT\_ BY JRH SUBJECT NITIAL FUNCTION CHECK DATE 6 4 01 CKD.\_\_\_\_ REVISION MICIZO-REM 11: 30 AM - Bockgrund INSTRUMENT : 5/N : (251A OK BATTERY : \$ 6/5/01 9:30am Allisen SOURLE TYPE CS-137 BACKGROUND 5/N: 1845-94 6/6/01 6 30 redone ul ١ ١ 5 correct 30 2 2 georetry 5 3 30 3 FLOOR 4 30 ¢ ч 5 5 2 5 6 6 3 Ç 7 6 7 8 5 5 5 5 9 9 4 3 10 10 11 5 25 11 WALL 30 25 12 6 (2 13 7 13 30 14 6 14 30 8 15 15 Avg= 28.3 0 = 5.32 Avg = 5.67 2.38 Timp : 6/5/01 Background Date: 9:30 am 4434343343 ۱ 2 3 Ч 5 6 7 8 9 10 Arg= 3.5 0 = 1.87

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#### PARSONS MAIN, INC.

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| CLIENT                                                | 2 Check<br>250°F      | _ JOB NO<br>BYA+1C<br>CKD |    |
|-------------------------------------------------------|-----------------------|---------------------------|----|
| Instrument: Micro<br>S/N: C2                          | s IA                  | HU = C<br>But =           | OK |
| Backyr Source                                         | (5-137<br>516:1845-94 |                           |    |
| Source Check                                          | ( jug for goometry    | Ş                         |    |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | <del>20</del> W       |                           |    |

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## C ସଟ । A MICRO-REM Serial Number <del>C252A</del> TEAM-1 (GREY)

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| DATE: 6/6/01 09/5                         | PAGE OF 48                |
|-------------------------------------------|---------------------------|
| Source                                    | Cs-137                    |
| Calibration Date                          | 3/20/2001                 |
| Out of Cal Date                           | 9/16/2001                 |
| Instrument Channel                        | N/A                       |
| High Voltage                              | OK                        |
| Battery Check                             | OK                        |
| Source Check Reading (1)                  | Initial cheek done in Mon |
| Source Check Reading (2)                  |                           |
| Source Check Reading (3)                  | th                        |
| Source Check Reading (4)                  |                           |
| Source Check Reading (5)                  |                           |
| Source Check Reading (AVERAGE)            |                           |
| Material:                                 | K.                        |
| Material Background reading SCANNING      | FUE                       |
| FLAG ( = 2X Material Background) SCANNING |                           |
| Direct Background reading (1)             | 4                         |
| Direct Background reading (2)             | 3                         |
| Direct Background reading (3)             | 5                         |
| Direct Background reading (4)             | 5                         |
| Direct Background reading (5)             | 6                         |
| Direct Background reading (AVERAGE)       | 5                         |
|                                           |                           |
| MID-DAY SOURCE READING                    | 其九 450                    |
| MID-DAY BACKGROUND READING                | 4                         |
| EVENING SOURCE READING                    | 500 Em                    |
| EVENING BACKGROUND READING                | 5                         |
| Morning check performed by                | trave                     |
| Mid-day check performed by                | XLov?                     |
| Evening check performed by                | Elim                      |

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| MICRO-REM | Serial | Number | C251A | TEAM-1 | (GREY) |  |
|-----------|--------|--------|-------|--------|--------|--|
|-----------|--------|--------|-------|--------|--------|--|

| DATE: 6-7-01                              | PAGE S OF | 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source                                    | Cs-137    | frage of the second sec |
| Out of Cal Date                           | 9/16/2001 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Serial Number                             | C251A     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Instrument Channel                        | N/A       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| High Voltage                              | oK        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Battery Check                             | OK        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source Check Reading (1)                  | Ent       | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (2)                  | Em        | 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (3)                  | 350       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source Check Reading (4)                  | 350       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source Check Reading (5)                  | 350       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source Check Reading (AVERAGE)            | 360       | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Material:                                 |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Material Background reading SCANNING      | W         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FLAG ( = 2X Material Background) SCANNING |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (1)             | 5         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (2)             | 4         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (3)             | 6         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (4)             | 7         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (5)             | 6         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (AVERAGE)       | 6         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                           |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MID-DAY SOURCE READING                    | 400       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MID-DAY BACKGROUND READING                | 5         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| EVENING SOURCE READING                    | 400       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| EVENING BACKGROUND READING                | 5         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Morning check performed by                | Etm       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Mid-day check performed by                | Eilm      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Evening check performed by                | SKM       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

PARSONS ENGINEERING SCIENCE

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MICRO-REM Serial Number C251A TEAM-1 (GREY)

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| DATE: 6/8/61                              | PAGE 7 OF 43               |               |
|-------------------------------------------|----------------------------|---------------|
| Source                                    | Cs-137                     |               |
| Calibration Date                          | 9/16/2001                  | -             |
| Serial Number                             | C251A                      | -1            |
| Instrument Channel                        | N/A                        |               |
| High Voltage                              | OK                         |               |
| Battery Check                             | ok                         | Later C       |
| Source Check Reading (1)                  | © 550 € 500 € 450          | cheek ble     |
| Source Check Reading (2)                  | 3 4 60 2 500 2 500         | jig was mede  |
| Source Check Reading (3)                  | 0 350 (°) 450 (°) 506      | for mileo-var |
| Source Check Reading (4)                  | @ 500 @ 500 @ 550          | EUE           |
| Source Check Reading (5)                  | \$ 500 \$ 525 \$ 400       |               |
| Source Check Reading (AVERAGE)            | see initial fx check shut  |               |
| Material:                                 |                            | -             |
| Material Background reading SCANNING      | W                          | 1             |
| FLAG ( = 2X Material Background) SCANNING |                            | - Q           |
| Direct Background reading (1)             | 040407                     |               |
| Direct Background reading (2)             | 040405                     |               |
| Direct Background reading (3)             | 06 0 5 0 6                 |               |
| Direct Background reading (4)             | 0 3 0 2 (1) 6              |               |
| Direct Background reading (5)             | 050304                     | 12.20         |
| Direct Background reading (AVERAGE)       | see initial fx check sheet |               |
|                                           |                            |               |
| MID-DAY SOURCE READING                    | not used in nur            |               |
| MID-DAY BACKGROUND READING                | with the with              |               |
| EVENING SOURCE READING                    | 550                        |               |
| EVENING BACKGROUND READING                | 6                          |               |
| Morning check performed by                | kik                        |               |
| Mid-day check performed by                | NA                         |               |
| Evening check performed by                | EKM 1830                   | - U           |

| DATE: 6/9/01                              | PAGE & OF 48 |
|-------------------------------------------|--------------|
| Source                                    | -Cs-137      |
| Calibration Date                          | 3/20/2001    |
| Serial Number                             | C251A        |
| Instrument Channel                        | N/A          |
| High Voltage                              | Ø(C          |
| Battery Check                             | OK           |
| Source Check Reading (1)                  | 500          |
| Source Check Reading (2)                  | 500          |
| Source Check Reading (3)                  | 500          |
| Source Check Reading (4)                  | 500          |
| Source Check Reading (5)                  | 500          |
| Source Check Reading (AVERAGE)            | 500 02       |
| Material:                                 |              |
| Material Background reading SCANNING      | ful          |
| FLAG ( = 2X Material Background) SCANNING |              |
|                                           |              |
| Direct Background reading (1)             | 1            |
| Direct Background reading (2)             | 3            |
| Direct Background reading (3)             | 5            |
| Direct Background reading (4)             | ٢            |
| Direct Background reading (5)             | 4            |
| Direct Background reading (AVERAGE)       | 4.4          |
|                                           |              |
| MID-DAY SOURCE READING                    |              |
| MID-DAY BACKGROUND READING                | use used i   |
| EVENING SOURCE READING                    | NOT TODAY    |
| EVENING BACKGROUND READING                | 100.         |
| Morning check performed by                | JR14 0730    |
| Mid-day check performed by                | W            |
| Evening check performed by                |              |

| MICRO-REM Serial Number C251 | 1A TEAM-1 (GREY) |
|------------------------------|------------------|
|------------------------------|------------------|

| DATE: 6/10/01                             | PAGE9 OF 48   |
|-------------------------------------------|---------------|
| Source                                    | Cs-137        |
| Out of Cal Date                           | 9/16/2001     |
| Serial Number                             | C251A         |
| Instrument Channel                        | N/A           |
| High Voltage                              | ok            |
| Battery Check                             | 014           |
| Source Check Reading (1)                  | 500           |
| Source Check Reading (2)                  | 500           |
| Source Check Reading (3)                  | 500           |
| Source Check Reading (4)                  | 550           |
| Source Check Reading (5)                  | 500           |
| Source Check Reading (AVERAGE)            | 510           |
| Material:                                 |               |
| Material Background reading SCANNING      | KUK           |
| FLAG ( = 2X Material Background) SCANNING |               |
|                                           |               |
| Direct Background reading (1)             | 1 7           |
| Direct Background reading (2)             | 5             |
| Direct Background reading (3)             | 5             |
| Direct Background reading (4)             | 6             |
| Direct Background reading (5)             | 3             |
| Direct Background reading (AVERAGE)       | 5             |
|                                           |               |
| MID-DAY SOURCE READING                    | notused in AM |
| MID-DAY BACKGROUND READING                | NA            |
| EVENING SOURCE READING                    | 500           |
| EVENING BACKGROUND READING                | 4             |
| Morning check performed by                | EKM           |
| Mid-day check performed by                | NA            |
|                                           | 1-1/1M        |

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| DATE: 6-11-01                             | PAGE 10 OF 48 |
|-------------------------------------------|---------------|
| Source                                    |               |
| Calibration Date                          | <u> </u>      |
| Serial Number                             | C251A         |
| Instrument Channel                        | N/A           |
| High Voltage                              | oK            |
| Battery Check                             | oK            |
| Source Check Reading (1)                  | 500           |
| Source Check Reading (2)                  | 500           |
| Source Check Reading (3)                  | 550           |
| Source Check Reading (4)                  | 500           |
| Source Check Reading (5)                  | 500           |
| Source Check Reading (AVERAGE)            | 510           |
| Material:                                 |               |
| Material Background reading SCANNING      | all           |
| FLAG ( = 2X Material Background) SCANNING |               |
| Direct Background reading (1)             | 4             |
| Direct Background reading (2)             | 4             |
| Direct Background reading (3)             | 6             |
| Direct Background reading (4)             | 5             |
| Direct Background reading (5)             | 4             |
| Direct Background reading (AVERAGE)       | 5             |
|                                           |               |
| MID-DAY SOURCE READING                    | 500           |
| MID-DAY BACKGROUND READING                | 5             |
| EVENING SOURCE READING                    | 500           |
| EVENING BACKGROUND READING                | 5             |
| Morning check performed by                | EKIN          |
| Mid-day check performed by                | EKM           |
| Evening check performed by                | DRG           |

MICRO-REM Serial Number C251A TEAM-1 (GREY)

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| DATE: 6/12/01                             | PAGE [  OF 48       |
|-------------------------------------------|---------------------|
| Source                                    | CS-137<br>3/20/2001 |
| Out of Cal Date                           | 9/16/2001           |
| Serial Number                             | C251A               |
| Instrument Channel                        | N/A                 |
| High Voltage                              | oK                  |
| Battery Check                             | oK                  |
| Source Check Reading (1)                  | 500                 |
| Source Check Reading (2)                  | 550                 |
| Source Check Reading (3)                  | 500                 |
| Source Check Reading (4)                  | 500                 |
| Source Check Reading (5)                  | 500                 |
| Source Check Reading (AVERAGE)            | 510                 |
| Material <sup>.</sup>                     |                     |
| Material Background reading SCANNING      | VIK                 |
| ELAG ( = 2X Material Background) SCANNING |                     |
|                                           |                     |
| Direct Background reading (1)             | 3                   |
| Direct Background reading (2)             | 5                   |
| Direct Background reading (3)             | 4                   |
| Direct Background reading (4)             | 3                   |
| Direct Background reading (5)             | 6                   |
| Direct Background reading (AVERAGE)       | 4                   |
|                                           |                     |
| MID-DAY SOURCE READING                    | 500                 |
| MID-DAY BACKGROUND READING                | 4                   |
| EVENING SOURCE READING                    | 500                 |
| EVENING BACKGROUND READING                | 5                   |
| Morning check performed by                | EKM                 |
|                                           | - V m               |
| Mid-day check performed by                | ERM                 |

## MICRO-REM Serial Number C251A TEAM-1 (GREY)

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|  | <b>MICRO-REM</b> | Serial | Number | C251A | TEAM-1 | (GREY |
|--|------------------|--------|--------|-------|--------|-------|
|--|------------------|--------|--------|-------|--------|-------|

| DATE: 6/13/01                                                                                                   | PAGE 120F 48       |  |  |
|-----------------------------------------------------------------------------------------------------------------|--------------------|--|--|
| Source                                                                                                          | Cs-137-            |  |  |
| Calibration Date                                                                                                | 3/20/2001          |  |  |
| Serial Number                                                                                                   | 9/16/2001<br>C251A |  |  |
| Instrument Channel                                                                                              | N/A                |  |  |
| High Voltage                                                                                                    | ok                 |  |  |
| Battery Check                                                                                                   | ok                 |  |  |
| Source Check Reading (1)                                                                                        | 550                |  |  |
| Source Check Reading (2)                                                                                        | 500                |  |  |
| Source Check Reading (3)                                                                                        | 550                |  |  |
| Source Check Reading (4)                                                                                        | 500                |  |  |
| Source Check Reading (5)                                                                                        | 500                |  |  |
| Source Check Reading (AVERAGE)                                                                                  | 520                |  |  |
| Material:                                                                                                       |                    |  |  |
| Material Background reading SCANNING                                                                            | vill               |  |  |
| FLAG ( = 2X Material Background) SCANNING                                                                       |                    |  |  |
|                                                                                                                 | 5                  |  |  |
| Direct Background reading (1)                                                                                   |                    |  |  |
| Direct Background reading (2)                                                                                   | 4                  |  |  |
| Direct Background reading (3)                                                                                   | 5                  |  |  |
| Direct Background reading (4)                                                                                   | 4                  |  |  |
| Direct Background reading (5)                                                                                   | 4                  |  |  |
| Direct Background reading (AVERAGE)                                                                             | <u>-</u>           |  |  |
| the second se |                    |  |  |
| MID-DAY SOURCE READING                                                                                          | 550                |  |  |
| MID-DAY BACKGROUND READING                                                                                      | 5                  |  |  |
| EVENING SOURCE READING                                                                                          | not used in PM     |  |  |
| EVENING BACKGROUND READING                                                                                      | NA                 |  |  |
| Morning check performed by                                                                                      | EKM 0700           |  |  |
| Mid-day check performed by                                                                                      | EKM 1230           |  |  |
| Evening check performed by                                                                                      | NA                 |  |  |

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| DATE: 6-18-01                             | PAGE 13 OF 48      |
|-------------------------------------------|--------------------|
| Source                                    | Cs-137             |
| Calibration Date                          | 3/20/2001          |
| Serial Number                             | 9/16/2001<br>C251A |
| Instrument Channel                        | N/A                |
| High Voltage                              | DK                 |
| Battery Check                             | ОК                 |
| Source Check Reading (1)                  | 500                |
| Source Check Reading (2)                  | 500                |
| Source Check Reading (3)                  | 500                |
| Source Check Reading (4)                  | 500                |
| Source Check Reading (5)                  | 500                |
| Source Check Reading (AVERAGE)            | 500                |
| Material:                                 |                    |
| Material Background reading SCANNING      | ret                |
| FLAG ( = 2X Material Background) SCANNING |                    |
|                                           | 17                 |
| Direct Background reading (1)             |                    |
| Direct Background reading (2)             | 5                  |
| Direct Background reading (3)             | The 4              |
| Direct Background reading (4)             | 4.5                |
| Direct Background reading (5)             | 5                  |
| Direct Background reading (AVERAGE)       | -AHALIK 5.1        |
|                                           |                    |
| MID-DAY SOURCE READING                    | not used in AM     |
| MID-DAY BACKGROUND READING                | NA                 |
| EVENING SOURCE READING                    | 500                |
| EVENING BACKGROUND READING                | 5                  |
| Morning check performed by                | KKS 1130           |
| Mid-day check performed by                | NA                 |
| Evening check performed by                | KKS 1720           |

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## MICRO-REM Serial Number C251A TEAM-1 (GREY)

| DATE: 6/19/01                             | PAGE 14 OF 48 |
|-------------------------------------------|---------------|
| Source                                    | Cs-137.       |
| Calibration Date                          | 3/20/2001     |
| Serial Number                             | C251A         |
| Instrument Channel                        | N/A           |
| High Voltage                              | ok            |
| Battery Check                             | ok            |
| Source Check Reading (1)                  | 500           |
| Source Check Reading (2)                  | 500           |
| Source Check Reading (3)                  | 500           |
| Source Check Reading (4)                  | 500           |
| Source Check Reading (5)                  | 500           |
| Source Check Reading (AVERAGE)            | 500           |
| Material:                                 |               |
| Material Background reading SCANNING      | KUK           |
| FLAG ( = 2X Material Background) SCANNING |               |
|                                           | T             |
| Direct Background reading (1)             | 7             |
| Direct Background reading (2)             | 6             |
| Direct Background reading (3)             | 3             |
| Direct Background reading (4)             | 5             |
| Direct Background reading (5)             | 5             |
| Direct Background reading (AVERAGE)       | 4,8 0=2.2     |
|                                           |               |
| MID-DAY SOURCE READING                    | 500           |
| MID-DAY BACKGROUND READING                | 5             |
| EVENING SOURCE READING                    | 550           |
| EVENING BACKGROUND READING                | 5             |
| Morning check performed by                | KKS           |
| Mid-day check performed by                | Rom 12:23p    |
| Evening check performed by                | KKS 1657      |

MICRO-REM Serial Number C251A TEAM-1 (GREY)

| DATE: 6-20-01                             | PAGE 15 OF 48 |  |
|-------------------------------------------|---------------|--|
| Source                                    | Cs-137        |  |
| Calibration Date                          | 3/20/2001     |  |
| Out of Cal Date                           | 9/16/2001     |  |
| Instrument Channel                        | N/A           |  |
| High Voltage                              | ok            |  |
| Battery Check                             | ok            |  |
| Source Check Reading (1)                  | 500           |  |
| Source Check Reading (2)                  | 500           |  |
| Source Check Reading (3)                  | 550           |  |
| Source Check Reading (4)                  | 550           |  |
| Source Check Reading (5)                  | 500           |  |
| Source Check Reading (AVERAGE)            | 520           |  |
| Material:                                 |               |  |
| Material Background reading SCANNING      | KUL           |  |
| FLAG ( = 2X Material Background) SCANNING |               |  |
|                                           |               |  |
| Direct Background reading (1)             | 5             |  |
| Direct Background reading (2)             | <u> </u>      |  |
| Direct Background reading (3)             | 3             |  |
| Direct Background reading (4)             | 5             |  |
| Direct Background reading (5)             | Ч             |  |
| Direct Background reading (AVERAGE)       | 4.2           |  |
|                                           |               |  |
| MID-DAY SOURCE READING                    | 510           |  |
| MID-DAY BACKGROUND READING                | 5             |  |
| EVENING SOURCE READING                    | 500           |  |
| EVENING BACKGROUND READING                | 5             |  |
| Morning check performed by                | PJM 0710      |  |
| Mid-day check performed by                | JMK 147       |  |
| Evening check performed by                | KYS 1720      |  |

## MICRO-REM Serial Number C251A TEAM-1 (GREY)
#### SENECA ARMY DEPOT SEAD-12 RI/FS

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### MICRO-REM Serial Number C252A TEAM-1 (GREY)

| DATE: 6/21/01                             | PAGE16 OF 48 |
|-------------------------------------------|--------------|
| Source                                    | Cs-137       |
| Calibration Date                          | 3/20/2001    |
| Serial Number                             | C252A        |
| Instrument Channel                        | N/A          |
| High Voltage                              | 010          |
| Battery Check                             | DK           |
| Source Check Reading (1)                  | 500          |
| Source Check Reading (2)                  | 500          |
| Source Check Reading (3)                  | 500          |
| Source Check Reading (4)                  | 500          |
| Source Check Reading (5)                  | 500          |
| Source Check Reading (AVERAGE)            | 500          |
| Material:                                 |              |
| Material Background reading SCANNING      | KUK          |
| FLAG ( = 2X Material Background) SCANNING |              |
| Direct Reakground reading (4)             | Ц            |
| Direct Background reading (1)             |              |
| Direct Background reading (2)             |              |
| Direct Background reading (3)             | )            |
| Direct Background reading (4)             | 3            |
| Direct Background reading (5)             | 4            |
| Direct Background reading (AVERAGE)       | Ч            |
|                                           |              |
| MID-DAY SOURCE READING                    | 500          |
| MID-DAY BACKGROUND READING                | 5            |
| EVENING SOURCE READING                    | 500          |
| EVENING BACKGROUND READING                | 5            |
| Morning check performed by                | JRH 0710     |
| Mid-day check performed by                | Rom 12:30    |
| Evening check performed by                | JMK 1715     |

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| DATE: 6(22(3)                             | PAGE/7 OF 48       |
|-------------------------------------------|--------------------|
| Source                                    | Cs-137             |
| Calibration Date                          | 3/20/2001          |
| Serial Number                             | 0/10/2001<br>C251A |
| Instrument Channel                        | N/A                |
| High Voltage                              | ok                 |
| Battery Check                             | ok                 |
| Source Check Reading (1)                  | 5.00               |
| Source Check Reading (2)                  | 500                |
| Source Check Reading (3)                  | 500                |
| Source Check Reading (4)                  | 500                |
| Source Check Reading (5)                  | 500                |
| Source Check Reading (AVERAGE)            | 500                |
| Material:                                 |                    |
| Material Background reading SCANNING      | Kill               |
| FLAG ( = 2X Material Background) SCANNING |                    |
| Direct Background reading (1)             | 5.5                |
| Direct Background reading (2)             | 5.0                |
| Direct Background reading (3)             | 4.5                |
| Direct Background reading (4)             | 5.0                |
| Direct Background reading (5)             | 5.0                |
| Direct Background reading (AVERAGE)       | 5.0                |
|                                           |                    |
| MID-DAY SOURCE READING                    | 500                |
| MID-DAY BACKGROUND READING                | 3.0                |
| EVENING SOURCE READING                    | 500                |
| EVENING BACKGROUND READING                | 6.0                |
| Morning check performed by                | 7:05a R5M          |
| Mid-day check performed by                | 12:30 p 20m        |
| Evening check performed by                | S:DP ROM           |

| DATE: 6/23/31                             | PAGE 13 OF 48 |
|-------------------------------------------|---------------|
| Source                                    | Cs-137        |
| Calibration Date                          | 3/20/2001     |
| Out of Cal Date                           | 9/16/2001     |
| Instrument Channel                        | N/A           |
| High Voltage                              | Olc           |
| Battery Check                             | Olc           |
| Source Check Reading (1)                  | 500           |
| Source Check Reading (2)                  | 500           |
| Source Check Reading (3)                  | 500           |
| Source Check Reading (4)                  | 500           |
| Source Check Reading (5)                  | 500           |
| Source Check Reading (AVERAGE)            | 500           |
| Material:                                 |               |
| Material Background reading SCANNING      | AK            |
| FLAG ( = 2X Material Background) SCANNING |               |
|                                           |               |
| Direct Background reading (1)             | 6             |
| Direct Background reading (2)             | 3             |
| Direct Background reading (3)             | 6             |
| Direct Background reading (4)             | 6             |
| Direct Background reading (5)             | 4             |
| Direct Background reading (AVERAGE)       | 5             |
|                                           |               |
| MID-DAY SOURCE READING                    | 500           |
| MID-DAY BACKGROUND READING                | 4             |
| EVENING SOURCE READING                    | 500           |
| EVENING BACKGROUND READING                | 4             |
| Morning check performed by                | Rom 0815 a    |
| Mid-day check performed by                | 20m 12:08p    |
| Evening check performed by                | RJM YILP      |

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| DATE: 6/24/01                             | PAGE 19 OF 48      |  |  |
|-------------------------------------------|--------------------|--|--|
| Source                                    | Cs-137             |  |  |
| Calibration Date                          | 3/20/2001          |  |  |
| Serial Number                             | 9/16/2001<br>C251A |  |  |
| Instrument Channel                        | N/A                |  |  |
| High Voltage                              | ok                 |  |  |
| Battery Check                             | ok                 |  |  |
| Source Check Reading (1)                  | \$ 500             |  |  |
| Source Check Reading (2)                  | 500                |  |  |
| Source Check Reading (3)                  | 500                |  |  |
| Source Check Reading (4)                  | 500                |  |  |
| Source Check Reading (5)                  | 500                |  |  |
| Source Check Reading (AVERAGE)            | 500                |  |  |
| Material:                                 |                    |  |  |
| Material Background reading SCANNING      | KIK                |  |  |
| FLAG ( = 2X Material Background) SCANNING |                    |  |  |
| Direct Background reading (1)             | Ц                  |  |  |
| Direct Background reading (1)             | 5                  |  |  |
| Direct Background reading (2)             | 2                  |  |  |
| Direct Background reading (4)             | E                  |  |  |
| Direct Background reading (5)             | Y Y                |  |  |
| Direct Background reading (AVERAGE)       | 4.2                |  |  |
|                                           |                    |  |  |
| MID-DAY SOURCE READING                    | 500                |  |  |
| MID-DAY BACKGROUND READING                | 5                  |  |  |
| EVENING SOURCE READING                    | 500                |  |  |
| EVENING BACKGROUND READING                | 4                  |  |  |
| Morning check performed by                | Rom 0715a          |  |  |
| Mid-day check performed by                | pm 12050           |  |  |
| Evening check performed by                | Rom 3:230          |  |  |

| DATE: 6125101                             | PAGE 20 OF 48           |
|-------------------------------------------|-------------------------|
| Source                                    | Cs-137                  |
| Calibration Date                          | 3/20/2001               |
| Out of Cal Date                           | 9/16/2001               |
| Serial Number                             | 0251A                   |
|                                           |                         |
| High Voltage                              | OŁ                      |
| Battery Check                             | OK                      |
| Source Check Reading (1)                  | 500                     |
| Source Check Reading (2)                  | 500                     |
| Source Check Reading (3)                  | 500                     |
| Source Check Reading (4)                  | 500                     |
| Source Check Reading (5)                  | 500                     |
| Source Check Reading (AVERAGE)            | 500                     |
| Material:                                 |                         |
| Material Background reading SCANNING      | KUK                     |
| FLAG ( = 2X Material Background) SCANNING |                         |
|                                           |                         |
| Direct Background reading (1)             | 9                       |
| Direct Background reading (2)             | 3                       |
| Direct Background reading (3)             | 5                       |
| Direct Background reading (4)             | 5                       |
| Direct Background reading (5)             | 4                       |
| Direct Background reading (AVERAGE)       | 4,2                     |
|                                           |                         |
| MID-DAY SOURCE READING                    | 500                     |
| MID-DAY BACKGROUND READING                | 5                       |
| EVENING SOURCE READING                    | 600                     |
| EVENING BACKGROUND READING                | Ý                       |
| Morning check performed by                | Rom 0710 80-70<br>Sunny |
| Mid-day check performed by                | Rom 12:05p              |
| Evening check performed by                | ROM 5:330               |

| DATE: 6/26/01                                                                                                 | PAGE21 OF 48           |  |  |
|---------------------------------------------------------------------------------------------------------------|------------------------|--|--|
| Source                                                                                                        | Cs-137                 |  |  |
| Calibration Date                                                                                              | 3/20/2001              |  |  |
| Serial Number                                                                                                 | 9/16/2001<br>C251A     |  |  |
| Instrument Channel                                                                                            | N/A                    |  |  |
| High Voltage                                                                                                  | OK                     |  |  |
| Battery Check                                                                                                 | оқ                     |  |  |
| Source Check Reading (1)                                                                                      | 500                    |  |  |
| Source Check Reading (2)                                                                                      | 500                    |  |  |
| Source Check Reading (3)                                                                                      | 500                    |  |  |
| Source Check Reading (4)                                                                                      | 500                    |  |  |
| Source Check Reading (5)                                                                                      | 450                    |  |  |
| Source Check Reading (AVERAGE)                                                                                | 490                    |  |  |
| Material:                                                                                                     |                        |  |  |
| Material Background reading SCANNING                                                                          | KUK                    |  |  |
| FLAG ( = 2X Material Background) SCANNING                                                                     |                        |  |  |
|                                                                                                               | jest l                 |  |  |
| Direct Background reading (1)                                                                                 | 5                      |  |  |
| Direct Background reading (2)                                                                                 | ч                      |  |  |
| Direct Background reading (3)                                                                                 | Ч                      |  |  |
| Direct Background reading (4)                                                                                 | 4.5                    |  |  |
| Direct Background reading (5)                                                                                 | 5                      |  |  |
| Direct Background reading (AVERAGE)                                                                           | 4.5                    |  |  |
|                                                                                                               |                        |  |  |
| MID-DAY SOURCE READING                                                                                        | 600                    |  |  |
| MID-DAY BACKGROUND READING                                                                                    | 4                      |  |  |
|                                                                                                               | 1.0                    |  |  |
| EVENING SOURCE READING                                                                                        | 600                    |  |  |
| EVENING SOURCE READING<br>EVENING BACKGROUND READING                                                          | 5                      |  |  |
| EVENING SOURCE READING<br>EVENING BACKGROUND READING<br>Morning check performed by                            | KKS - clear, 68°F, day |  |  |
| EVENING SOURCE READING   EVENING BACKGROUND READING   Morning check performed by   Mid-day check performed by | 12:05:0                |  |  |

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| DATE: (02701                              | PAGEZ2OF 48          |
|-------------------------------------------|----------------------|
| Source                                    | Cs-137               |
| Calibration Date                          | 9/16/2001            |
| Serial Number                             | C251A                |
| Instrument Channel                        | N/A                  |
| High Voltage                              | OK                   |
| Battery Check                             | 015                  |
| Source Check Reading (1)                  | 506                  |
| Source Check Reading (2)                  | 500                  |
| Source Check Reading (3)                  | 550                  |
| Source Check Reading (4)                  | 500                  |
| Source Check Reading (5)                  | 550                  |
| Source Check Reading (AVERAGE)            | 526                  |
| Material:                                 |                      |
| Material Background reading SCANNING      | VUK                  |
| FLAG ( = 2X Material Background) SCANNING |                      |
|                                           | -                    |
| Direct Background reading (1)             | 5                    |
| Direct Background reading (2)             |                      |
| Direct Background reading (3)             | 4                    |
| Direct Background reading (4)             | ما                   |
| Direct Background reading (5)             | 5                    |
| Direct Background reading (AVERAGE)       | 4.8                  |
|                                           |                      |
| MID-DAY SOURCE READING                    | 500                  |
| MID-DAY BACKGROUND READING                | 5                    |
| EVENING SOURCE READING                    | 500                  |
| EVENING BACKGROUND READING                | 5                    |
| Morning check performed by                | AMC 6710 Wether War  |
| Mid-day check performed by                | ROM 12:25 SUANY 75"= |
| Evening check performed by                | JRH 1735             |
|                                           |                      |

| DATE: 6/28/01                             | PAGE23 OF 48                       |
|-------------------------------------------|------------------------------------|
| Source                                    | Cs-137                             |
| Calibration Date                          | 3/20/2001                          |
| Serial Number                             | C251A                              |
| Instrument Channel                        | N/A                                |
| High Voltage                              | OK                                 |
| Battery Check 014                         | 216                                |
| Source Check Reading (1)                  | 500                                |
| Source Check Reading (2)                  | 500                                |
| Source Check Reading (3)                  | 500                                |
| Source Check Reading (4)                  | 500                                |
| Source Check Reading (5)                  | 550                                |
| Source Check Reading (AVERAGE)            | 510                                |
| Material:                                 |                                    |
| Material Background reading SCANNING      | VUL                                |
| FLAG ( = 2X Material Background) SCANNING |                                    |
| Direct Background reading (1)             | (                                  |
| Direct Background reading (2)             | 7                                  |
| Direct Background reading (3)             | 6.5                                |
| Direct Background reading (4)             | 6.5                                |
| Direct Background reading (5)             | 7                                  |
| Direct Background reading (AVERAGE)       | 6.6                                |
|                                           |                                    |
| MID-DAY SOURCE READING                    | 500                                |
| MID-DAY BACKGROUND READING                | 5                                  |
| EVENING SOURCE READING                    | 500                                |
| EVENING BACKGROUND READING                | 5                                  |
| Morning check performed by                | icies 68°F, Sunny, Der Factor= 80% |
| Mid-day check performed by                | Rm 12:12p                          |
| Evening check performed by                | KLK                                |

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| MICRO-REM | Serial | Number | C251A | TEAM-1 | (GREY) |  |
|-----------|--------|--------|-------|--------|--------|--|
|-----------|--------|--------|-------|--------|--------|--|

| DATE: 6/29(0)                             | PAGE24 OF 48                |
|-------------------------------------------|-----------------------------|
| Source                                    | Cs-137                      |
| Calibration Date                          | 3/20/2001                   |
| Serial Number                             | C251A                       |
| Instrument Channel                        | N/A                         |
| High Voltage                              | 014                         |
| Battery Check                             | OK                          |
| Source Check Reading (1)                  | 600                         |
| Source Check Reading (2)                  | 550                         |
| Source Check Reading (3)                  | 500                         |
| Source Check Reading (4)                  | 500                         |
| Source Check Reading (5)                  | 500                         |
| Source Check Reading (AVERAGE)            | 530                         |
| Material:                                 |                             |
| Material Background reading SCANNING      | Vik                         |
| FLAG ( = 2X Material Background) SCANNING | E                           |
|                                           |                             |
| Direct Background reading (1)             | 0<br>7                      |
| Direct Background reading (2)             | //                          |
| Direct Background reading (3)             |                             |
| Direct Background reading (4)             | 6                           |
| Direct Background reading (5)             | 7                           |
| Direct Background reading (AVERAGE)       | 7                           |
|                                           |                             |
| MID-DAY SOURCE READING                    | 500                         |
| MID-DAY BACKGROUND READING                | 5.500 1014                  |
| EVENING SOURCE READING                    | 55D                         |
| EVENING BACKGROUND READING                | 4                           |
| Morning check performed by                | Rom 07:10 a Hazy, Sunny 70° |
| Mid-day check performed by                | icies 1120                  |
| Evening check performed by                | JUR 1526 HOT/HOMD           |

| DATE: 6/9/0                               | PAGE25 OF 48           |
|-------------------------------------------|------------------------|
| Source                                    | Cs-137                 |
| Calibration Date                          | 3/20/2001              |
| Serial Number                             | C251A                  |
| Instrument Channel                        | N/A                    |
| High Voltage                              | 015                    |
| Battery Check                             | OK                     |
| Source Check Reading (1)                  | 550                    |
| Source Check Reading (2)                  | 550                    |
| Source Check Reading (3)                  | 500                    |
| Source Check Reading (4)                  | 350                    |
| Source Check Reading (5)                  | 550                    |
| Source Check Reading (AVERAGE)            | 540                    |
| Material:                                 |                        |
| Material Background reading SCANNING      | YUK                    |
| FLAG ( = 2X Material Background) SCANNING |                        |
|                                           |                        |
| Direct Background reading (1)             | 30                     |
| Direct Background reading (2)             | 50                     |
| Direct Background reading (3)             | 50                     |
| Direct Background reading (4)             | 5.0                    |
| Direct Background reading (5)             | 50                     |
| Direct Background reading (AVERAGE)       | 5,0                    |
|                                           |                        |
| MID-DAY SOURCE READING                    | 500                    |
| MID-DAY BACKGROUND READING                | 5                      |
| EVENING SOURCE READING                    | 500                    |
| EVENING BACKGROUND READING                | 6                      |
| Morning check performed by                | KKS Sunny; clear; 70°F |
| Mid-day check performed by                | Kies 1150              |
| Evening check performed by                | AML 1750 sunny 70°F    |

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| DATE: 3/10/01                             | PAGE26 OF 48       |
|-------------------------------------------|--------------------|
| Source                                    | Cs-137             |
| Calibration Date                          | 3/20/2001          |
| Serial Number                             | 9/16/2001<br>C251A |
| Instrument Channel                        | N/A                |
| High Voltage 0K                           | ok                 |
| Battery Check OK                          | OK                 |
| Source Check Reading (1)                  | 500                |
| Source Check Reading (2)                  | 500                |
| Source Check Reading (3)                  | 500                |
| Source Check Reading (4)                  | 500                |
| Source Check Reading (5)                  | 200                |
| Source Check Reading (AVERAGE)            | 500                |
| Material:                                 |                    |
| Material Background reading SCANNING      | KUK                |
| FLAG ( = 2X Material Background) SCANNING |                    |
|                                           |                    |
| Direct Background reading (1)             | 5                  |
| Direct Background reading (2)             | 4                  |
| Direct Background reading (3)             | 4                  |
| Direct Background reading (4)             | 5                  |
| Direct Background reading (5)             | 5                  |
| Direct Background reading (AVERAGE)       | 4.6                |
|                                           |                    |
| MID-DAY SOURCE READING                    | 500                |
| MID-DAY BACKGROUND READING                | 5                  |
| EVENING SOURCE READING                    | 60                 |
| EVENING BACKGROUND READING                | 4                  |
| Morning check performed by ICK S          | cloudy, humid, 70° |
| Mid-day check performed by KICS           | NA                 |
| Evening check performed by Rom            | Sunny 78°          |

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| DATE: 7/11/01                          |      | PAGE TOF 48             |  |
|----------------------------------------|------|-------------------------|--|
| Source                                 |      | Cs-137                  |  |
| Calibration Date                       |      | 3/20/2001               |  |
| Serial Number                          |      | C251A                   |  |
| Instrument Channel                     |      | N/A                     |  |
| High Voltage                           | OK   | OK                      |  |
| Battery Check                          | ok   | OK                      |  |
| Source Check Reading (1)               |      | 600                     |  |
| Source Check Reading (2)               |      | 600                     |  |
| Source Check Reading (3)               |      | 1000                    |  |
| Source Check Reading (4)               |      | 600                     |  |
| Source Check Reading (5)               |      | 600                     |  |
| Source Check Reading (AVERAGE)         |      | 600                     |  |
| Material:                              |      |                         |  |
| Material Background reading SCANNING   |      | jak                     |  |
| FLAG ( = 2X Material Background) SCANN | ING  |                         |  |
| Direct Deckman and the (4)             |      | ſ                       |  |
| Direct Background reading (1)          |      | 6                       |  |
| Direct Background reading (2)          |      |                         |  |
| Direct Background reading (3)          | -    | 3                       |  |
| Direct Background reading (4)          | -    | Ĵ.                      |  |
| Direct Background reading (5)          |      | 5                       |  |
| Direct Background reading (AVERAGE)    |      | 5                       |  |
|                                        |      |                         |  |
| MID-DAY SOURCE READING                 |      | 550                     |  |
| MID-DAY BACKGROUND READING             |      | 5                       |  |
| EVENING SOURCE READING                 |      | 600                     |  |
| EVENING BACKGROUND READING             |      | 5                       |  |
| Morning check performed by             | 45   | Sum, 68°, 80°le Humidin |  |
| Mid-day check performed by k           | ks   | NA                      |  |
| Evening check performed by             | cies | Sunny, 78°              |  |

| DATE: 7/12/01                                                                                                   | PAGE28 OF 48    |
|-----------------------------------------------------------------------------------------------------------------|-----------------|
| Source                                                                                                          | Cs-137          |
| Calibration Date                                                                                                | 3/20/2001       |
| Serial Number                                                                                                   | C251A           |
| Instrument Channel                                                                                              | N/A             |
| High Voltage OIC                                                                                                | OK              |
| Battery Check new batterys installed - Oik                                                                      | ok              |
| Source Check Reading (1)                                                                                        | 550             |
| Source Check Reading (2)                                                                                        | 550             |
| Source Check Reading (3)                                                                                        | 550             |
| Source Check Reading (4)                                                                                        | 550             |
| Source Check Reading (5)                                                                                        | 5 50            |
| Source Check Reading (AVERAGE)                                                                                  | 550             |
| Material:                                                                                                       |                 |
| Material Background reading SCANNING                                                                            | Kik             |
| FLAG ( = 2X Material Background) SCANNING                                                                       |                 |
|                                                                                                                 | -               |
| Direct Background reading (1)                                                                                   | 3               |
| Direct Background reading (2)                                                                                   | 5               |
| Direct Background reading (3)                                                                                   | 5               |
| Direct Background reading (4)                                                                                   | 5               |
| Direct Background reading (5)                                                                                   | 5               |
| Direct Background reading (AVERAGE)                                                                             | 5               |
| and a second and a s |                 |
| MID-DAY SOURCE READING                                                                                          | 600             |
| MID-DAY BACKGROUND READING                                                                                      | Ч               |
| EVENING SOURCE READING                                                                                          | 550             |
| EVENING BACKGROUND READING                                                                                      | 5               |
| Morning check performed by jclcs                                                                                | 60°F, Sung, Dry |
| Mid-day check performed by                                                                                      | JKH 1150        |
| Evening check performed by                                                                                      | JMK             |

| DATE: 7/13/04                        |        | PAGE29 OF 48           |
|--------------------------------------|--------|------------------------|
| Source                               |        | Cs-137                 |
| Calibration Date                     |        | 3/20/2001              |
| Serial Number                        |        | C251A                  |
| Instrument Channel                   |        | N/A                    |
| High Voltage                         | OK     | OK                     |
| Battery Check                        | OK     | oK                     |
| Source Check Reading (1)             |        | 550                    |
| Source Check Reading (2)             |        | 550                    |
| Source Check Reading (3)             |        | 550                    |
| Source Check Reading (4)             |        | 550                    |
| Source Check Reading (5)             |        | 550                    |
| Source Check Reading (AVERAGE)       |        | 550                    |
| Material:                            |        |                        |
| Material Background reading SCANNIN  | NG     | icile                  |
| FLAG ( = 2X Material Background) SC. | ANNING |                        |
| Direct Declarge and reading (1)      |        | 5                      |
| Direct Background reading (1)        |        | 5                      |
| Direct Background reading (2)        |        |                        |
| Direct Background reading (3)        |        | 3                      |
| Direct Background reading (4)        |        | 3                      |
| Direct Background reading (5)        |        | 3                      |
| Direct Background reading (AVERAGE   | :)     | 3                      |
|                                      |        | 550                    |
|                                      |        | 4                      |
|                                      |        | 500                    |
|                                      |        | 6.5                    |
| Morning check performed by           | kr s   | 68°F Partly Cloud, dry |
| Mid-day check performed by           | Carro  | VUK JO'F               |
| Evening check performed by           |        | KLK FROF 1730          |
| Evening encorrect performed by       |        |                        |

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| DATE: 7/14/01                             | PAGE30 OF 48                  |
|-------------------------------------------|-------------------------------|
| Source                                    | Cs-137                        |
| Calibration Date                          | 3/20/2001                     |
| Out of Cal Date                           | 9/16/2001                     |
| Instrument Channel                        | N/A                           |
| High Voltage HV                           |                               |
| Battery Check                             |                               |
| Source Check Reading (1)                  | 500                           |
| Source Check Reading (2)                  | 500                           |
| Source Check Reading (3)                  | 500                           |
| Source Check Reading (4)                  | 500                           |
| Source Check Reading (5)                  | 500                           |
| Source Check Reading (AVERAGE)            | 500                           |
| Material:                                 |                               |
| Material Background reading SCANNING      | ville                         |
| FLAG ( = 2X Material Background) SCANNING |                               |
|                                           |                               |
| Direct Background reading (1)             | 3                             |
| Direct Background reading (2)             | 5                             |
| Direct Background reading (3)             | 6                             |
| Direct Background reading (4)             | 4                             |
| Direct Background reading (5)             | 5                             |
| Direct Background reading (AVERAGE)       | 5                             |
|                                           |                               |
| MID-DAY SOURCE READING                    | 500                           |
| MID-DAY BACKGROUND READING                | 4                             |
| EVENING SOURCE READING                    | 500                           |
| EVENING BACKGROUND READING                | 5                             |
| Morning check performed by                | KICS 0710 60°F, Clarily, Hund |
| Mid-day check performed by                | JRU 1210                      |
| Evening check performed by                | JAK 1700                      |

|  | MICRO-R | <b>EM</b> Serial | Number | C251A | TEAM-1 | (GREY) |
|--|---------|------------------|--------|-------|--------|--------|
|--|---------|------------------|--------|-------|--------|--------|

| DATE: 7/15/01                             | PAGES OF 48         |
|-------------------------------------------|---------------------|
| Source                                    | Cs-137<br>3/20/2001 |
| Out of Cal Date                           | 9/16/2001           |
| Serial Number                             | C251A               |
| Instrument Channel                        | N/A                 |
| High Voltage                              | OK                  |
| Battery Check                             | 0 K                 |
| Source Check Reading (1)                  | 550                 |
| Source Check Reading (2)                  | 600                 |
| Source Check Reading (3)                  | 500                 |
| Source Check Reading (4)                  | 550                 |
| Source Check Reading (5)                  | 003                 |
| Source Check Reading (AVERAGE)            | 560                 |
| Material:                                 |                     |
| Material Background reading SCANNING      | , IV                |
| FLAG ( = 2X Material Background) SCANNING |                     |
|                                           |                     |
| Direct Background reading (1)             | Ŵ                   |
| Direct Background reading (2)             | 10                  |
| Direct Background reading (3)             | 5                   |
| Direct Background reading (4)             | 4                   |
| Direct Background reading (5)             | ч                   |
| Direct Background reading (AVERAGE)       | 4.8                 |
|                                           |                     |
| MID-DAY SOURCE READING                    | 600                 |
| MID-DAY BACKGROUND READING                | 5                   |
| EVENING SOURCE READING                    | 600                 |
| EVENING BACKGROUND READING                | 5.                  |
| Morning check performed by TK             | 0715                |
| Mid-day check performed by AML            | 1200 Sunny Dam Flif |
| - · · · · · · · · · · · · · · · · · · ·   | 1.000               |

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| DATE: 7/16/01                             | PAGE 32 OF 48        |
|-------------------------------------------|----------------------|
| Source                                    | Cs-137               |
| Calibration Date                          | 3/20/2001            |
| Serial Number                             | C251A                |
| Instrument Channel                        | N/A                  |
| High Voltage                              | OK                   |
| Battery Check                             | OIS                  |
| Source Check Reading (1)                  | 500                  |
| Source Check Reading (2)                  | 500                  |
| Source Check Reading (3)                  | 500                  |
| Source Check Reading (4)                  | 500                  |
| Source Check Reading (5)                  | 500                  |
| Source Check Reading (AVERAGE)            | 500                  |
| Material:                                 |                      |
| Material Background reading SCANNING      | Kill                 |
| FLAG ( = 2X Material Background) SCANNING |                      |
| Direct Reckargund reading (1)             | l i                  |
| Direct Background reading (1)             | ic ic                |
| Direct Background reading (2)             | 5                    |
| Direct Background reading (5)             | 7                    |
| Direct Background reading (5)             | 6                    |
| Direct Background reading (AVERAGE)       | 10                   |
|                                           |                      |
| MID-DAY SOURCE READING                    | 500                  |
| MID-DAY BACKGROUND READING                | 5                    |
| EVENING SOURCE READING                    | 500                  |
| EVENING BACKGROUND READING                | 5                    |
| Morning check performed by                | KKS 0707 PCloud, 650 |
| Mid-day check performed by                | JRH 1210             |
| Evening check performed by                | JRH 1710             |

| DATE: 7-17-101                            | PAGE 33 OF 48            |  |
|-------------------------------------------|--------------------------|--|
| Source                                    | Cs-137                   |  |
| Calibration Date                          | 3/20/2001                |  |
| Out of Gal Date                           | 9/16/2001<br>C251A       |  |
| Instrument Channel                        | N/A                      |  |
| High Voltage                              | δk                       |  |
| Battery Check                             | Dik                      |  |
| Source Check Reading (1)                  | 550                      |  |
| Source Check Reading (2)                  | 550                      |  |
| Source Check Reading (3)                  | 600                      |  |
| Source Check Reading (4)                  | 550                      |  |
| Source Check Reading (5)                  | 550                      |  |
| Source Check Reading (AVERAGE)            | 560                      |  |
| Material:                                 |                          |  |
| Material Background reading SCANNING      | int                      |  |
| FLAG ( = 2X Material Background) SCANNING |                          |  |
|                                           | 10                       |  |
|                                           |                          |  |
| Direct Background reading (2)             | 4                        |  |
| Direct Background reading (3)             | <u>Ч</u><br>К            |  |
| Direct Background reading (4)             | 3                        |  |
| Direct Background reading (5)             | 6                        |  |
| Direct Background reading (AVERAGE)       | 5                        |  |
|                                           |                          |  |
| MID-DAY SOURCE READING                    | 500                      |  |
| MID-DAY BACKGROUND READING                | 6                        |  |
| EVENING SOURCE READING                    | p 5                      |  |
| EVENING BACKGROUND READING                | 7 600                    |  |
| Morning check performed by JMK            | 7-17-2001 RAIN 70° 01720 |  |
| Mid-day check performed by                | Fovercast 70 11:54a      |  |
| Evening check performed by AMU            | 1710 overcest 70°        |  |

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| DATE: 7/19/01                             | PAGE 34 OF 48   |
|-------------------------------------------|-----------------|
| Source                                    | Cs-137          |
| Calibration Date                          | 3/20/2001       |
| Serial Number                             | C251A           |
| Instrument Channel                        | N/A             |
| High Voltage 014                          | QL              |
| Battery Check                             | OK              |
| Source Check Reading (1)                  | 500             |
| Source Check Reading (2)                  | 500             |
| Source Check Reading (3)                  | 550             |
| Source Check Reading (4)                  | 550             |
| Source Check Reading (5)                  | .500            |
| Source Check Reading (AVERAGE)            | 50 520          |
| Material:                                 |                 |
| Material Background reading SCANNING      | FLK             |
| FLAG ( = 2X Material Background) SCANNING |                 |
|                                           |                 |
| Direct Background reading (1)             | ц               |
| Direct Background reading (2)             | 4               |
| Direct Background reading (3)             | 5               |
| Direct Background reading (4)             | Ч               |
| Direct Background reading (5)             | 4               |
| Direct Background reading (AVERAGE)       | 4.2             |
|                                           |                 |
| MID-DAY SOURCE READING                    | 510             |
| MID-DAY BACKGROUND READING                | 5               |
| EVENING SOURCE READING                    | 600             |
| EVENING BACKGROUND READING                | 5               |
| Morning check performed by                | 67°F, Foss1     |
| Mid-day check performed by AMC            | 1200 72°F Sourg |
| Evening check performed by AML            | 1540 7398 Sanay |

| DATE: 7-23-200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PAGE35 OF 48               |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--|
| Source and the second | Cs-137                     |  |
| Calibration Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3/20/2001                  |  |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 9/16/2001<br>C251A         |  |
| Instrument Channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N/A                        |  |
| High Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OK                         |  |
| Battery Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | σĸ                         |  |
| Source Check Reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 8                          |  |
| Source Check Reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 6                          |  |
| Source Check Reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5                          |  |
| Source Check Reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ч                          |  |
| Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5                          |  |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5.6                        |  |
| Material:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            |  |
| Material Background reading SCANNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Vel K                      |  |
| FLAG (= 2X Material Background) SCANNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | A                          |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Fra                        |  |
| Direct Background reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 530                        |  |
| Direct Background reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 250                        |  |
| Direct Background reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 600                        |  |
| Direct Background reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 550                        |  |
| Direct Background reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 600                        |  |
| Direct Background reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 570                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |  |
| MID-DAY SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 6                          |  |
| MID-DAY BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 500                        |  |
| EVENING SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5                          |  |
| EVENING BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 550                        |  |
| Morning check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | JEK 0720 Homel 74° PS HAZE |  |
| Mid-day check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ites 1215 Hund 75° PS Haze |  |
| Evening check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | KUL                        |  |

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| DATE: 7-24-01                             | PAGE36 OF 48       |
|-------------------------------------------|--------------------|
| Source                                    | - Cs-137           |
| Calibration Date                          | 3/20/2001          |
| Out of Cal Date                           | 9/16/2001<br>C251A |
| Instrument Channel                        | N/A                |
| High Voltage                              | DK                 |
| Battery Check                             | OK                 |
| Source Check Reading (1)                  | 600                |
| Source Check Reading (2)                  | 600                |
| Source Check Reading (3)                  | 600                |
| Source Check Reading (4)                  | 600                |
| Source Check Reading (5)                  | 600                |
| Source Check Reading (AVERAGE)            | 600                |
| Material:                                 |                    |
| Material Background reading SCANNING      | 118                |
| FLAG ( = 2X Material Background) SCANNING | E                  |
|                                           | 11                 |
|                                           |                    |
| Direct Background reading (2)             | 6                  |
| Direct Background reading (3)             | 2                  |
| Direct Background reading (4)             | <u> </u>           |
| Direct Background reading (5)             | Ч                  |
| Direct Background reading (AVERAGE)       | 5                  |
|                                           |                    |
| MID-DAY SOURCE READING                    | 500                |
| MID-DAY BACKGROUND READING                | 4                  |
| EVENING SOURCE READING                    | 600                |
| EVENING BACKGROUND READING                | Ч                  |
| Morning check performed by TMK 0713       | 76° OCHTHUMID      |
| Mid-day check performed by Kks 1157       | 76° cloudy Hunid   |
| Evening check performed by KKS 1740       | 78° clady Hum. 1   |

#### SENECA ARMY DEPOT SEAD-12 RI/FS

### MICRO-REM Serial Number C251A TEAM-1 (GREY)

| DATE: 7/25/01                             | PAGE 37 OF 48               |
|-------------------------------------------|-----------------------------|
| Source                                    | Cs=137                      |
| Calibration Date                          | 3/20/2001                   |
| Serial Number                             | 9/16/2001<br>C251A          |
| Instrument Channel                        | N/A                         |
| High Voltage                              | ok                          |
| Battery Check                             | ok                          |
| Source Check Reading (1)                  | 55                          |
| Source Check Reading (2)                  | 50                          |
| Source Check Reading (3)                  | 55                          |
| Source Check Reading (4)                  | 60                          |
| Source Check Reading (5)                  | 50                          |
| Source Check Reading (AVERAGE)            | 54                          |
| Material:                                 |                             |
| Material Background reading SCANNING      | KIK                         |
| FLAG ( = 2X Material Background) SCANNING |                             |
|                                           |                             |
| Direct Background reading (1)             | 3                           |
| Direct Background reading (2)             | 6                           |
| Direct Background reading (3)             | 6                           |
| Direct Background reading (4)             | 5                           |
| Direct Background reading (5)             | - 6                         |
| Direct Background reading (AVERAGE)       | 6                           |
|                                           |                             |
| MID-DAY SOURCE READING                    | 60                          |
| MID-DAY BACKGROUND READING                | 4                           |
| EVENING SOURCE READING                    | 60                          |
| EVENING BACKGROUND READING                | 4                           |
| Morning check performed by                | Rom humid, sunny, 75°       |
| Mid-day check performed by                | it 76 Hund i sunny          |
| Evening check performed by                | Rom 5:350 78° Humid succest |

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#### SENECA ARMY DEPOT SEAD-12 RI/FS

| DATE: : / 26/01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE 38 OF 48      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Cs-137             |
| Calibration Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3/20/2001          |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0/16/2001<br>C251A |
| Instrument Channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | N/A                |
| High Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OK                 |
| Battery Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 015                |
| Source Check Reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                |
| Source Check Reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 007                |
| Source Check Reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                |
| Source Check Reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                |
| Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 500                |
| Material:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |
| Material Background reading SCANNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | VUK                |
| FLAG (= 2X Material Background) SCANNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | E                  |
| the state of the s |                    |
| Direct Background reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5                  |
| Direct Background reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5                  |
| Direct Background reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6                  |
| Direct Background reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6                  |
| Direct Background reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5                  |
| Direct Background reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5.4                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |
| MID-DAY SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 500                |
| MID-DAY BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5                  |
| EVENING SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 500                |
| EVENING BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5                  |
| Morning check performed by KLS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 74°F, Showers      |
| Mid-day check performed by Klcg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 73°F, Sunny        |
| Evening check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 74°F Sunny         |

| DATE: 7/27/01                             | PAGE39 OF 48         |  |
|-------------------------------------------|----------------------|--|
| Source                                    | Cs-137               |  |
| Calibration Date                          | 3/20/2001            |  |
| Serial Number                             | C251A                |  |
| Instrument Channel                        | N/A                  |  |
| High Voltage                              | ok                   |  |
| Battery Check                             | ok                   |  |
| Source Check Reading (1)                  | 500                  |  |
| Source Check Reading (2)                  | 500                  |  |
| Source Check Reading (3)                  | 500                  |  |
| Source Check Reading (4)                  | 500                  |  |
| Source Check Reading (5)                  | 500                  |  |
| Source Check Reading (AVERAGE)            | 500                  |  |
| Material:                                 |                      |  |
| Material Background reading SCANNING      | FUK                  |  |
| FLAG ( = 2X Material Background) SCANNING |                      |  |
| Direct Background reading (1)             | 5                    |  |
| Direct Background reading (2)             | 4                    |  |
| Direct Background reading (3)             | 6                    |  |
| Direct Background reading (4)             | 5                    |  |
| Direct Background reading (5)             | 5                    |  |
| Direct Background reading (AVERAGE)       | 5                    |  |
|                                           |                      |  |
| MID-DAY SOURCE READING                    | 550                  |  |
| MID-DAY BACKGROUND READING                | 5                    |  |
| EVENING SOURCE READING                    | 550                  |  |
| EVENING BACKGROUND READING                | 5                    |  |
| Morning check performed by                | Kom 68° Sunny 7:10 a |  |
| Mid-day check performed by                | 20m 70° Sunny 12:43p |  |
| Evening check performed by                | Rom 74° Sunny 5:23p  |  |

( <sup>...</sup>.

| DATE: 7/28/01                             | PAGE40 OF 48        |  |
|-------------------------------------------|---------------------|--|
| Source                                    | Cs-137              |  |
| Calibration Date                          | 3/20/2001           |  |
| Serial Number                             | 9/16/2001<br>C251A  |  |
| Instrument Channel                        | N/A                 |  |
| High Voltage                              | ok                  |  |
| Battery Check                             | ok                  |  |
| Source Check Reading (1)                  | 550                 |  |
| Source Check Reading (2)                  | 550                 |  |
| Source Check Reading (3)                  | 550                 |  |
| Source Check Reading (4)                  | 600                 |  |
| Source Check Reading (5)                  | 600                 |  |
| Source Check Reading (AVERAGE)            | 570                 |  |
| Material:                                 |                     |  |
| Material Background reading SCANNING      | ill                 |  |
| FLAG ( = 2X Material Background) SCANNING |                     |  |
| Direct Rookersund as direction (4)        |                     |  |
| Direct Dackground reading (1)             | ~ ~ ~               |  |
| Direct Background reading (2)             |                     |  |
| Direct Background reading (3)             | 17                  |  |
| Direct Background reading (4)             | 4                   |  |
| Direct Background reading (5)             | 5                   |  |
| Direct Background reading (AVERAGE)       | 5                   |  |
| the state and the state of the            |                     |  |
| MID-DAY SOURCE READING                    | 550                 |  |
| MID-DAY BACKGROUND READING                | 5                   |  |
| EVENING SOURCE READING                    | \$50                |  |
| EVENING BACKGROUND READING                | 5                   |  |
| Morning check performed by                | Rom Sunny 7:30a 67° |  |
| Mid-day check performed by                | KKS sunny dry 20°   |  |
|                                           |                     |  |

| DATE: 7/29/01                             | PAGEA OF 48                     |  |
|-------------------------------------------|---------------------------------|--|
| Source                                    | Cs-137                          |  |
| Calibration Date                          | 3/20/2001                       |  |
| Serial Number                             | C251A                           |  |
| Instrument Channel                        | N/A                             |  |
| High Voltage                              | 0K                              |  |
| Battery Check                             | 014                             |  |
| Source Check Reading (1)                  | 600                             |  |
| Source Check Reading (2)                  | 600                             |  |
| Source Check Reading (3)                  | 600                             |  |
| Source Check Reading (4)                  | 609                             |  |
| Source Check Reading (5)                  | 600                             |  |
| Source Check Reading (AVERAGE)            | 662                             |  |
| Material:                                 |                                 |  |
| Material Background reading SCANNING      | V.VÉ                            |  |
| FLAG ( = 2X Material Background) SCANNING |                                 |  |
|                                           |                                 |  |
| Direct Background reading (1)             |                                 |  |
| Direct Background reading (2)             | 6                               |  |
| Direct Background reading (3)             | 6                               |  |
| Direct Background reading (4)             | 6                               |  |
| Direct Background reading (5)             | 6                               |  |
| Direct Background reading (AVERAGE)       | 6                               |  |
|                                           |                                 |  |
| MID-DAY SOURCE READING                    | 600                             |  |
| MID-DAY BACKGROUND READING                | 6                               |  |
| EVENING SOURCE READING                    | 600                             |  |
| EVENING BACKGROUND READING                | 5                               |  |
| Morning check performed by                | 405,0723, 70°F, Sunny, Jury     |  |
| Mid-day check performed by                | KUS, 1217, 72°F, P. Clasdy, dry |  |
| Evening check performed by                | JK 1540 P/C, Dru                |  |

(<sup>...</sup>.

#### SENECA ARMY DEPOT SEAD-12 RI/FS

| DATE: 7/30/01                             | PAGE42 OF 48             |  |
|-------------------------------------------|--------------------------|--|
| Source                                    | Cs-137                   |  |
| Calibration Date                          | 3/20/2001                |  |
| Serial Number                             | 9/16/2001<br>C251A       |  |
| Instrument Channel                        | N/A                      |  |
| High Voltage                              | OK                       |  |
| Battery Check                             | ok                       |  |
| Source Check Reading (1)                  | 600                      |  |
| Source Check Reading (2)                  | 550                      |  |
| Source Check Reading (3)                  | 550                      |  |
| Source Check Reading (4)                  | 550                      |  |
| Source Check Reading (5)                  | 500                      |  |
| Source Check Reading (AVERAGE)            | 550                      |  |
| Material:                                 |                          |  |
| Material Background reading SCANNING      | YUL                      |  |
| FLAG ( = 2X Material Background) SCANNING |                          |  |
| Direct Background reading (1)             | 6                        |  |
| Direct Background reading (2)             | 8                        |  |
| Direct Background reading (3)             | (p                       |  |
| Direct Background reading (4)             | 7                        |  |
| Direct Background reading (5)             | 5                        |  |
| Direct Background reading (AVERAGE)       | 6.4                      |  |
|                                           |                          |  |
| MID-DAY SOURCE READING                    | daily check done at 1330 |  |
| MID-DAY BACKGROUND READING                | NA                       |  |
| EVENING SOURCE READING                    | not used in PM           |  |
| EVENING BACKGROUND READING                | NA                       |  |
| Morning check performed by                | KLK 1330                 |  |
| Mid-day check performed by                | NA                       |  |
| Evening check performed by                | NA                       |  |

### MICRO-REM Serial Number C251A TEAM-1 (GREY)

| DATE: 8/8/61                              | PAGE43 OF 48          |
|-------------------------------------------|-----------------------|
| Source                                    | Cs-137                |
| Calibration Date                          | 3/20/2001             |
| Serial Number                             | C251A                 |
| Instrument Channel                        | N/A                   |
| High Voltage                              | sk                    |
| Battery Check                             | 0 k                   |
| Source Check Reading (1)                  | 570                   |
| Source Check Reading (2)                  | 500                   |
| Source Check Reading (3)                  | 500                   |
| Source Check Reading (4)                  | 600                   |
| Source Check Reading (5)                  | 600                   |
| Source Check Reading (AVERAGE)            | . 540                 |
| Material:                                 |                       |
| Material Background reading SCANNING      | KUL                   |
| FLAG ( = 2X Material Background) SCANNING |                       |
|                                           | 5                     |
| Direct Background reading (1)             | 5                     |
| Direct Background reading (2)             | Ē                     |
| Direct Background reading (3)             |                       |
| Direct Background reading (4)             | 5                     |
| Direct Background reading (5)             | 7                     |
| Direct Background reading (AVERAGE)       | 5.6                   |
|                                           |                       |
| MID-DAY SOURCE READING                    | 500                   |
| MID-DAY BACKGROUND READING                | 6                     |
| EVENING SOURCE READING                    | NAT IL DALLON         |
| EVENING BACKGROUND READING                | NUT USED IN PM - JK   |
| Morning check performed by                | IRH UZZO SURAY huma   |
| Mid-day check performed by                | Rom 11:10 Somry homid |
| Evening check performed by                | NA                    |

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| MICRO-REM Se | rial Number | C251A | TEAM-1 | GREY) |
|--------------|-------------|-------|--------|-------|
|--------------|-------------|-------|--------|-------|

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| DATE: 2/10/01                             | PAGE \$4 OF 48                    |
|-------------------------------------------|-----------------------------------|
| Source                                    | Cs-137                            |
| Calibration Date                          | 3/20/2001                         |
| Serial Number                             | C251A                             |
| Instrument Channel                        | N/A                               |
| High Voltage                              | ok                                |
| Battery Check                             | Ok                                |
| Source Check Reading (1)                  | 600                               |
| Source Check Reading (2)                  | 600                               |
| Source Check Reading (3)                  | 600                               |
| Source Check Reading (4)                  | 600                               |
| Source Check Reading (5)                  | 600                               |
| Source Check Reading (AVERAGE)            | 600                               |
| Material:                                 |                                   |
| Material Background reading SCANNING      | VUK                               |
| FLAG ( = 2X Material Background) SCANNING |                                   |
|                                           | ~                                 |
| Direct Background reading (1)             | >                                 |
| Direct Background reading (2)             | 6                                 |
| Direct Background reading (3)             | 6                                 |
| Direct Background reading (4)             | 5                                 |
| Direct Background reading (5)             | 5                                 |
| Direct Background reading (AVERAGE)       | 5.4                               |
|                                           |                                   |
| MID-DAY SOURCE READING                    | T. T. ID. T. M. O.                |
| MID-DAY BACKGROUND READING                | Inicial pone 42 martia            |
| EVENING SOURCE READING                    | 600                               |
| EVENING BACKGROUND READING                | 6                                 |
| Morning check performed by                | NA                                |
| Mid-day check performed by                | Rom 80° mostly sonny hunid 12:17, |
| Evening check performed by                | Rom 84° sunny humid 5:45,         |

| DATE: 8/22/01                             | PAGE 45 OF 18            |
|-------------------------------------------|--------------------------|
| Source                                    | Cs-137                   |
| Calibration Date                          | 3/20/2001                |
| Serial Number                             | C251A                    |
| Instrument Channel                        | N/A                      |
| High Voltage                              | ok                       |
| Battery Check                             | olc                      |
| Source Check Reading (1)                  | 620                      |
| Source Check Reading (2)                  | 600                      |
| Source Check Reading (3)                  | 690                      |
| Source Check Reading (4)                  | 600                      |
| Source Check Reading (5)                  | 600                      |
| Source Check Reading (AVERAGE)            | 600                      |
| Material:                                 |                          |
| Material Background reading SCANNING      | KIK                      |
| FLAG ( = 2X Material Background) SCANNING |                          |
| Direct Background reading (1)             | 6                        |
| Direct Background reading (2)             | 6                        |
| Direct Background reading (3)             | 5                        |
| Direct Background reading (4)             | 5                        |
| Direct Background reading (5)             | 6                        |
| Direct Background reading (AVERAGE)       | 5.6                      |
|                                           |                          |
| MID-DAY SOURCE READING                    | 600                      |
| MID-DAY BACKGROUND READING                | 7                        |
| EVENING SOURCE READING                    | METHSED IN PAA           |
| EVENING BACKGROUND READING                |                          |
| Morning check performed by                | RJM Sway 7:35a 72° humil |
| Mid-day check performed by JRU 1700       | not used in pm           |
| Evening check performed by                | 11 11                    |

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| DATE: 2126 (01                            | PAGE46 OF 48             |  |
|-------------------------------------------|--------------------------|--|
| Source                                    | Cs-137                   |  |
| Out of Cal Date                           | 9/16/2001                |  |
| Serial Number                             | C251A                    |  |
| Instrument Channel                        | N/A                      |  |
| High Voltage                              | JL                       |  |
| Battery Check                             | ol                       |  |
| Source Check Reading (1)                  | 600                      |  |
| Source Check Reading (2)                  | 600                      |  |
| Source Check Reading (3)                  | 550                      |  |
| Source Check Reading (4)                  | 550                      |  |
| Source Check Reading (5)                  | 550                      |  |
| Source Check Reading (AVERAGE)            | 570                      |  |
| Material:                                 |                          |  |
| Material Background reading SCANNING      | FUE                      |  |
| FLAG ( = 2X Material Background) SCANNING |                          |  |
| Direct Deckersund reading (1)             | 6                        |  |
| Direct Background reading (1)             | <u>ч</u>                 |  |
|                                           |                          |  |
| Direct Background reading (3)             | <u> </u>                 |  |
| Direct Background reading (4)             | >                        |  |
| Direct Background reading (5)             | 5                        |  |
| Direct Background reading (AVERAGE)       | 5.2                      |  |
|                                           |                          |  |
| MID-DAY SOURCE READING                    | Not used in AM           |  |
| MID-DAY BACKGROUND READING                | NA                       |  |
| EVENING SOURCE READING                    | Not used in PM           |  |
| EVENING BACKGROUND READING                | NA                       |  |
| Morning check performed by                | JRY 1230                 |  |
| Mid-day check performed by                | NOT POPCODALED BUT IL    |  |
| ,,                                        | I NOT PERSONEN BUIL / LA |  |

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| DATE: 8.27.01                             | PAGE 47 OF 48 |
|-------------------------------------------|---------------|
| Source                                    | Cs-137        |
| Calibration Date                          | 3/20/2001     |
| Serial Number                             | C251A         |
| Instrument Channel                        | N/A           |
| High Voltage                              | OK            |
| Battery Check                             | ok            |
| Source Check Reading (1)                  | (980)         |
| Source Check Reading (2)                  | 500           |
| Source Check Reading (3)                  | 500           |
| Source Check Reading (4)                  | 51            |
| Source Check Reading (5)                  | 560           |
| Source Check Reading (AVERAGE)            | 520           |
| Material:                                 |               |
| Material Background reading SCANNING      | KUC           |
| FLAG ( = 2X Material Background) SCANNING |               |
|                                           | 7             |
| Direct Background reading (1)             | 7             |
| Direct Background reading (2)             | 9             |
| Direct Background reading (3)             | 6             |
| Direct Background reading (4)             | 6             |
| Direct Background reading (5)             | 4             |
| Direct Background reading (AVERAGE)       | 5.4           |
|                                           |               |
| MID-DAY SOURCE READING                    |               |
| MID-DAY BACKGROUND READING                |               |
| EVENING SOURCE READING                    | 550           |
| EVENING BACKGROUND READING                | 5             |
| Morning check performed by                | KUK 1620      |
| Mid-day check performed by                | NA            |
| Evening check performed by                | KUIL 1815     |

Morning chile dow at 1620

| DATE: . & 28 01                           | PAGE48 OF 48   | |
|---|---|---|
| Source                                    | Cs-137         |
| Calibration Date                          | 3/20/2001      |
| Serial Number                             | C251A          |
| Instrument Channel                        | N/A            |
| High Voltage                              | ek             |
| Battery Check                             | ok             |
| Source Check Reading (1)                  | set at 500     |
| Source Check Reading (2)                  | 550            |
| Source Check Reading (3)                  | 600            |
| Source Check Reading (4)                  | 500            |
| Source Check Reading (5)                  | 500            |
| Source Check Reading (AVERAGE)            | 530            |
| Material:                                 |                |
| Material Background reading SCANNING      | KIK            |
| FLAG ( = 2X Material Background) SCANNING |                |
| Direct Background reading (1)             |                |
| Direct Background reading (2)             | 5              |
| Direct Background reading (3)             | 4              |
| Direct Background reading (4)             | 6              |
| Direct Background reading (5)             | 6              |
| Direct Background reading (AVERAGE)       | 5.             |
|                                           |                |
| MID-DAY SOURCE READING                    | not used in AM |
| MID-DAY BACKGROUND READING                | NA             |
| EVENING SOURCE READING                    | - 550          |
| EVENING BACKGROUND READING                | 7              |
| Morning check performed by                | JR1 0730       |
| Mid-day check performed by                | NA             |
| Evening check performed by                | KUK 7030       |
| SEA                           | D-12 RI/FS  |              |
|-------------------------------|-------------|--------------|
| Site: Seneca Army Depot       | 14/2001     | 7            |
| Project: SEAD-12              | -           |              |
| Team: 2 BLACK                 | _           |              |
|                               |             | Page 1 of 58 |
| Instrument Type               | Beta Seta   | Gross Gamma  |
| AKA                           | Pancake G-M | Pancake G-M  |
| Make                          | Ludlum      | Ludlum       |
| Model                         | 3           | 3            |
| Serial Number                 | 61457       | 61457        |
| Calibration Date              | 4/3/2001    | 4/3/2001     |
| Out of Cal Date               | 9/30/2001   | . 9/30/2001  |
| Probe                         | Gross Gamma | Gross Gamma  |
| Make                          | Ludlum      | Ludlum       |
| Model                         | 44-9        | 44-9         |
| Serial Number                 | PR026657    | PR026657     |
| Calibration Date              | 4/3/2001    | 4/3/2001     |
| Out of Cal Date               | 9/30/2001   | 9/30/2001    |
| Source                        | тс-99       | Cs-137       |
| Source type                   | Alpha-      | 🗁 🦳 Gamma 🐇  |
| Calibration Date              | 4/10/2001   | 4/10/2001    |
| Out of Cal Date               | 3/31/2001   | 3/31/2001    |
| Serial Number                 | 1039-92     | 1845-94      |
| Source emission rate          | 11100 dpm   | 1768566 dp   |
| Instrument Channel            | N/A         | N/A          |
| initial instrument efficiency | 0,05        | 0.01         |
| 2 Sigma Range                 | 355-671     | 11887-15580  |

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#### PARSONS ENGINEERING SCIENCE

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PARSONS MAIN, INC.

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# 61457/026657 Pancake G-M Serial Number 61403/61751 KLK

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| DATE:                                | 0/5/01    | PAGE 3 OF 58                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source                               | Tc-99     | Cs-137                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Type                          | Alpha     | Gamma                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Calibration Date                     | 4/3/2001  | 4/3/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Out of Cal Date                      | 9/30/2001 | 9/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Serial Number                        | 61457     | 61457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source emission rate                 | 0.05      | 6. 01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Instrument Channel                   | N/A       | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| High Voltage                         |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Battery Check                        |           | all                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Source Check Reading (1)             |           | C Cut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source Check Reading (2)             |           | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (3)             | 111.60    | Kuc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Source Check Reading (4)             |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source Check Reading (5)             | /         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source Check Reading (AVERAGE)       | /         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Material:                            |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Scan Background reading (only 1)     |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                      |           | A STATE OF THE STA |
| Direct Background reading (1)        |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (2)        |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (3)        |           | fe/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Direct Background reading (4)        |           | 1 rh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Direct Background reading (5)        | - hal     | che                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Direct Background reading (AVERAGE)  | 1 uni     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Efficiency (= (CPM-Background) / DPM | /         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FLAG ( = 2X Background) SCANNING     |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FLAG ( = 2X Background) DIRECT       |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MID-DAY SOURCE READING               | /         | ta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                      |           | - good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| EVENING SOURCE READING               | 200 -     | /0000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| EVENING BACKGROUND READING           | 20        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Morning check performed by           | FVA       | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Mid-day check performed by           | NA        | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Evening check performed by           | . :(m     | S.V. Inn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# 61457 Pancake G-M Serial Number-61403/51751-

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| DATE: 6/6/01                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE 4 OF 58      |           |
| Source                               | IC-99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Cs-137            |           |
| Source Type                          | Alpna 4/3/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Gamma<br>4/3/2001 | 1         |
| Out of Cal Date                      | 9/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 9/30/2001         |           |
| Serial Number                        | 61457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 61457             | 1         |
| Source emission rate                 | 0.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0,01              |           |
| Instrument Channel                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A               | 1         |
| High Voltage                         | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |           |
| Battery Check                        | ~                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                 |           |
| Source Check Reading (1)             | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10000             |           |
| Source Check Reading (2)             | 300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10000             |           |
| Source Check Reading (3)             | 300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 12000 /           | poor when |
| Source Check Reading (4)             | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10000             | 9,14      |
| Source Check Reading (5)             | 300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10000             | J         |
| Source Check Reading (AVERAGE)       | 260                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10400             |           |
| Material:                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | VIL               |           |
| Scan Background reading (only 1)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -For              | 0         |
|                                      | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                |           |
| Direct Background reading (1)        | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                |           |
| Direct Background reading (2)        | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                |           |
| Direct Background reading (3)        | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                |           |
| Direct Background reading (4)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 15                |           |
| Direct Background reading (5)        | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 10                |           |
| Direct Background reading (AVERAGE)  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 19                | 1.1       |
| Efficiency (= (CPM-Background) / DPM |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |           |
| FLAG ( = 2X Background) SCANNING     | Et                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |           |
| FLAG ( = 2X Background) DIRECT       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   | BAT       |
| MID-DAY SOURCE READING               | 600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 14000             | DIL       |
| MID-DAY BACKGROUND READING           | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                | ok        |
| EVENING SOURCE READING               | 600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15000             | oK        |
| EVENING BACKGROUND READING           | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 30                |           |
| Morning check performed by           | ERM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | EKM               | 100       |
| Mid-day check performed by           | VRH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | urt               |           |
| Evening check performed by           | DRG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DRC               | 1.00      |

| DATE: 6/7 01                         |                 |     | PAGES    | OF 58 |
|--------------------------------------|-----------------|-----|----------|-------|
| Source                               | TC-99           |     | Cs-137   |       |
| Source Type                          | A Alphon Beline |     | Gamma    |       |
| Calibration Date                     | 4/3/2001        |     | 4/3/2001 |       |
| Out of Cal Date                      | 9/30/2001       |     | 9/30/200 | 1     |
| Selial Number                        | 61457           |     | 61457    |       |
| Instrument Channel                   | 0.05<br>N/A     |     |          |       |
|                                      |                 |     | IN/A     | /     |
| High Voltage                         | ote             |     |          | 010   |
| Battery Check                        | SIC             | 04  |          | 064   |
| Source Check Reading (1)             | 600             |     | 15000    |       |
| Source Check Reading (2)             | 600             |     | 15000    |       |
| Source Check Reading (3)             | 500             |     | 15000.   |       |
| Source Check Reading (4)             | 600             |     | 15000    |       |
| Source Check Reading (5)             | 6.00            |     | 15000    |       |
| Source Check Reading (AVERAGE)       | 580             | OK  | 15000    | UK    |
|                                      |                 |     |          |       |
| Material:                            |                 | FLK |          |       |
| Scan Background reading (only 1)     |                 |     |          | -     |
| Direct Background reading (1)        | 20              |     | NA       |       |
| Direct Background reading (2)        | 20              |     | NA       |       |
| Direct Background reading (3)        | 20              |     | NA       |       |
| Direct Background reading (4)        | 30              |     | NA       |       |
| Direct Background reading (5)        | 30              |     | NA       |       |
| Direct Background reading (AVERAGE)  | 24              |     | NA       |       |
| Efficiency (= (CPM-Background) / DPM |                 |     |          |       |
| ELAG (= 2X Background) SCANNING      |                 | rik |          |       |
| ELAG (= 2X Background) DIRECT        |                 |     |          |       |
| TENO ( - EN DAGREGIOUNIU) DINEOT     |                 |     |          |       |
| MID-DAY SOURCE READING               | 500             | eL  | 14000    | CL    |
| MID-DAY BACKGROUND READING           | 20              |     | NA       |       |
| EVENING SOURCE READING               | 500             | ok  | 15000    | Ble   |
| EVENING BACKGROUND READING           | 20              |     | NA       |       |
| Morning check performed by           | JRH 0900        |     | NA       |       |
| Mid-day check performed by           | JEH 1245        |     | NA       |       |
| Evening check performed by           | JRH 1805        |     | NA       |       |

| Source Type         Control Type         Calibration Date         Alpha Scient         Calibration Date           Calibration Date         4/3/2001         4/3/2001         4/3/2001           Out of Cal Date         9/30/2001         9/30/2001           Source Type         0.5         0.5           Source emission rate         0.05         0.5           Instrument Channel         N/A         N/A           High Voltage         N/A         N/A           Battery Check         0/L         0/L           Source Check Reading (1)         \$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DATE: 614101                         | T-OO      | PAGE 6 OF 58 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------|--------------|
| Discrete System     Discrete System     Discrete System       Out of Cal Date     9/30/2001     9/30/2001       Serial Number     61457     61457       Serial Number     61457     61457       Source emission rate     0.05     0.15       Instrument Channel     N/A     N/A       High Voltage     N/A     N/A       Battery Check     0k     0k     0k       Source Check Reading (1)     \$200     15000       Source Check Reading (2)     \$600     15000       Source Check Reading (3)     \$500     15000       Source Check Reading (4)     \$500     15000       Source Check Reading (5)     \$700     15000       Source Check Reading (6)     \$700     15000       Source Check Reading (6)     \$700     15000       Source Check Reading (1)     \$755     \$200     \$15000       Source Check Reading (0nly 1)     NA     NA     NA       Material:     NA     NA     NA       Direct Background reading (1)     \$755     \$200     NA       Direct Background reading (3)     \$20     NA       Direct Background reading (5)     \$20     NA       Direct Background reading (5)     \$20     NA       Direct Background reading (5) <th>Source Turne</th> <th>PR-C-DF</th> <th>Commo</th>                                                                                                                                                                                                                                                                                                                      | Source Turne                         | PR-C-DF   | Commo        |
| California         Construction         Construction <td>Calibration Date</td> <td>4/3/2001</td> <td>4/3/2001</td> | Calibration Date                     | 4/3/2001  | 4/3/2001     |
| Serial Number       61457       61457         Source emission rate       0.05       0.5;         Instrument Channel       N/A       N/A         High Voltage       N/A       N/A         Battery Check       0k       0k         Source Check Reading (1)       \$200       15200         Source Check Reading (2)       \$640       15200         Source Check Reading (3)       \$200       15200         Source Check Reading (3)       \$200       15200         Source Check Reading (4)       \$200       15200         Source Check Reading (5)       \$200       15200         Source Check Reading (5)       \$200       15200         Source Check Reading (5)       \$200       \$15000         Source Check Reading (6)       \$200       \$15000         Source Check Reading (1)       \$255       \$200       \$15000         Material:       NA       NA       NA         Direct Background reading (1)       \$255       \$200       NA         Direct Background reading (3)       \$300       \$NA       \$NA         Direct Background reading (4)       \$200       \$NA       \$NA         Direct Background reading (AVERAGE)       \$24       \$NA                                                                                                                                                                                                                                                                                                                                                              | Out of Cal Date                      | 9/30/2001 | 9/30/2001    |
| Source emission rate       0.05       0.01         Instrument Channel       N/A       N/A         High Voltage       N/A       N/A         Battery Check       0k       0K         Source Check Reading (1)       \$00       15800         Source Check Reading (2)       660       15800         Source Check Reading (3)       \$500       15800         Source Check Reading (4)       \$500       15800         Source Check Reading (5)       \$500       15800         Source Check Reading (5)       \$500       15800         Source Check Reading (A)       \$500       15800         Source Check Reading (AVERAGE)       \$200       NA         Direct Background reading (1)       \$755       \$200       NA         Direct Background reading (3)       \$300       NA       NA         Direct Background reading (3)       \$20       NA       NA         Direct Background reading (5)       \$20       NA       NA         Direct Background reading (AVERAGE)       \$24       NA                                                                                                                                                                                                                                                                                                                                                          | Serial Number                        | 61457     | 61457        |
| Instrument Channel       N/A       N/A         High Voltage       N/A       P A         Battery Check       0k       0k       0k         Source Check Reading (1)       SDA       15000         Source Check Reading (2)       600       15000         Source Check Reading (3)       STO       15000         Source Check Reading (3)       STO       15000         Source Check Reading (4)       STO       15000         Source Check Reading (5)       JTO       15000         Source Check Reading (6)       JTO       15000         Source Check Reading (AVERAGE)       STO       15000         Source Check Reading (0)       JTO       NA       NA         NA       NA       NA       NA         Scan Background reading (0)       JTT       ZC       NA         Direct Background reading (1)       JTT       ZC       NA         Direct Background reading (3)       JTO       NA       NA         Direct Background reading (4)       JC       NA       NA         Direct Background reading (AVERAGE)       ZV       NA       NA         Direct Background reading (AVERAGE)       ZV       NA       NA         Direct Backgr                                                                                                                                                                                                                                                                                                                                                                                              | Source emission rate                 | 0.05      | 0, 0)        |
| High Voltage       NA       PA         Battery Check       0K       0K       0K         Source Check Reading (1)       SDØ       15000         Source Check Reading (2)       G60       15000         Source Check Reading (3)       STO       15000         Source Check Reading (3)       STO       15000         Source Check Reading (4)       STO       15000         Source Check Reading (5)       JTO       15000         Source Check Reading (5)       JTO       15000         Source Check Reading (6)       STO       15000         Source Check Reading (6)       JTO       15000         Source Check Reading (7)       STO       15000         Source Check Reading (7)       STO       15000         Source Check Reading (10011)       NA       NA         Material:       NA       NA         Scan Background reading (0011)       NA       NA         Direct Background reading (10011)       NA       NA         Direct Background reading (3)       STO       NA         Direct Background reading (5)       ZTO       NA         Direct Background reading (AVERAGE)       ZY       NA         Efficiency (= (CPM-Background) / DPM       <                                                                                                                                                                                                                                                                                                                                                                       | nstrument Channel                    | N/A       | N/A          |
| Battery Check       OK       OK         Source Check Reading (1)       \$00       15000         Source Check Reading (2)       \$60       15000         Source Check Reading (3)       \$100       15000         Source Check Reading (3)       \$100       15000         Source Check Reading (4)       \$1000       15000         Source Check Reading (5)       \$1000       15000         Source Check Reading (5)       \$1000       15000         Source Check Reading (6)       \$2000       \$10000         Source Check Reading (1)       \$10000       \$10000         Material:       NA       NA         Scan Background reading (only 1)       NA       NA         Direct Background reading (2)       \$20000       NA         Direct Background reading (3)       \$300000       NA         Direct Background reading (3)       \$300000000       NA         Direct Background reading (4)       \$3000000000000000000000000000000000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | High Voltage                         | NA        | AY           |
| Source Check Reading (1)       \$200       15000         Source Check Reading (2)       \$600       15000         Source Check Reading (3)       \$200       15000         Source Check Reading (4)       \$200       15000         Source Check Reading (5)       \$200       15000         Source Check Reading (5)       \$200       15000         Source Check Reading (5)       \$200       \$15000         Source Check Reading (AVERAGE)       \$200       \$15000         Material:       NA       NA         Material:       NA       NA         Scan Background reading (only 1)       NA       NA         Direct Background reading (1)       \$755       \$200       NA         Direct Background reading (2)       \$200       NA         Direct Background reading (3)       \$200       NA         Direct Background reading (4)       \$300       NA         Direct Background reading (5)       \$220       NA'         Direct Background reading (6)       \$220       NA'         D                                                                                                                                                                                                                                                                                                                                              | Battery Check                        | ok        | OK           |
| Source Check Reading (2)       GOD       i \$COD         Source Check Reading (3)       SCO       i \$COD         Source Check Reading (4)       SEC       1 \$COD         Source Check Reading (5)       SEC       1 \$COD         Source Check Reading (5)       SEC       1 \$COD         Source Check Reading (5)       SEC       1 \$COD         Source Check Reading (AVERAGE)       SEC       JEC         Material:       NA       NA         Scan Background reading (only 1)       NA       NA         Direct Background reading (1)       275       ZC       NA         Direct Background reading (2)       20       NA       NA         Direct Background reading (3)       30       NA       NA         Direct Background reading (4)       300       NA       NA         Direct Background reading (5)       22       NA'       NA         Direct Background Direct       YA       NA                                                                                                                                                                                                                                                                                                                                                              | Source Check Reading (1)             | 500       | 15000        |
| Source Check Reading (3)       SCO       15000         Source Check Reading (4)       SCC       15000         Source Check Reading (5)       SCO       15000         Source Check Reading (5)       SCO       15000         Source Check Reading (AVERAGE)       SCO       15000         Material:       NA       NA         Material:       NA       NA         Scan Background reading (only 1)       NA       NA         Direct Background reading (1)       0755       20       NA         Direct Background reading (2)       20       NA       NA         Direct Background reading (3)       30       NA       NA         Direct Background reading (4)       300       NA       NA         Direct Background reading (5)       220       NA       NA         Direct Background reading (AVERAGE)       24       NA       NA         Efficiency (= (CPM-Background) / DPM       FLAG (= 2X Background) SCANNING       FLAG (= 2X Background) DIRECT       VA         MID-DAY SOURCE READING       4500       (40000       20       20         WID-DAY BACKGROUND READING       20       20       20       20       20         EVENING BACKGROUND READING       20       20 <td>Source Check Reading (2)</td> <td>600</td> <td>15000</td>                                                                                                                                                                                                                                                                                         | Source Check Reading (2)             | 600       | 15000        |
| Source Check Reading (4)       SCC       15000         Source Check Reading (5)       SCC       15000         Source Check Reading (AVERAGE)       S2000000000000000000000000000000000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Source Check Reading (3)             | 500       | 15000        |
| Source Check Reading (6)       JDA       ISOG         Source Check Reading (AVERAGE)       S20       JC       ISOG         Material:       NA       NA       NA         Scan Background reading (only 1)       NA       NA         Direct Background reading (1)       0755       2 0       NA         Direct Background reading (2)       20       NA         Direct Background reading (3)       30       NA         Direct Background reading (3)       30       NA         Direct Background reading (5)       22       NA         Direct Background reading (5)       20       NA         Direct Background reading (5)       20       NA         Direct Background reading (AVERAGE)       24       NA         Direct Background reading (AVERAGE)       24       NA         Direct Background reading (AVERAGE)       24       NA         Direct Background Peading (AVERAGE)       24       NA         Efficiency (= (CPM-Background) JCANNING       140000         FLAG (= 2X Background) DIRECT                                                                                                                                                                                                                                                                                                                                     | Source Check Reading (4)             | SCC       | 15000        |
| Source Check Reading (AVERAGE)       S20 ,/c       15000         Material:       NA       NA         Scan Background reading (only 1)       NA       NA         Direct Background reading (1) 0755       20       NA         Direct Background reading (2)       20       NA         Direct Background reading (2)       20       NA         Direct Background reading (3)       30       NA         Direct Background reading (4)       300       NA         Direct Background reading (5)       22       NA         Direct Background reading (5)       22       NA         Direct Background reading (5)       24       NA         Direct Background reading (4)       300       NA         Direct Background reading (5)       22       NA         Direct Background reading (5)       24       NA         Direct Background reading (4)       300       NA         Direct Background Peading (5)       24       NA         Efficiency (= (CPM-Background) / DPM       FLAG (= 2X Background) SCANNING       FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING       4500       140000         MID-DAY BACKGROUND READING       20       20         EVENING BACKGROUND READING       20                                                                                                                                                                                                                                                                                                                                  | Source Check Reading (5)             | 552       | 60021        |
| Material:       NA       NA         Scan Background reading (only 1)       NA       NA         Direct Background reading (1) $0755$ $2$ C       NA         Direct Background reading (2) $20$ NA         Direct Background reading (3) $30$ NA         Direct Background reading (3) $30$ NA         Direct Background reading (4) $3$ C       NA         Direct Background reading (5) $22$ NA         Direct Background reading (5) $22$ NA         Direct Background reading (AVERAGE) $24$ NA         Direct Background reading (AVERAGE) $24$ NA         Efficiency (= (CPM-Background) / DPM $450$ $14000$ FLAG (= 2X Background) SCANNING $450$ $14000$ FLAG (= 2X Background) DIRECT $450$ $14000$ MID-DAY SOURCE READING $2.0$ $2.0$ EVENING SOURCE READING $500$ $2.00$ EVENING BACKGROUND READING $2.0$ $2.0$ Morning check performed by $4.44$ $NA$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Source Check Reading (AVERAGE)       | 520 NK    | 15808 de     |
| Scan Background reading (only 1)       NA       NA         Direct Background reading (1) $0.755$ 2 C       NA         Direct Background reading (2) $20$ NA         Direct Background reading (3) $30$ NA         Direct Background reading (3) $30$ NA         Direct Background reading (3) $30$ NA         Direct Background reading (4) $30$ NA         Direct Background reading (5) $2.2$ NA         Direct Background reading (AVERAGE) $24$ NA         Direct Background reading (AVERAGE) $24$ NA         Direct Background reading (AVERAGE) $24$ NA         Efficiency (= (CPM-Background) / DPM $450$ $4000$ FLAG (= 2X Background) SCANNING $450$ $4000$ FLAG (= 2X Background) DIRECT $450$ $4000$ MID-DAY SOURCE READING $2.0$ $2.0$ EVENING SOURCE READING $500$ $2.0$ EVENING BACKGROUND READING $2.0$ $2.0$ Morning check performed by $KK$ NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Material:                            | NA        | NA           |
| Direct Background reading (1)       2755       20       NA         Direct Background reading (2)       20       NA         Direct Background reading (3)       30       NA         Direct Background reading (3)       30       NA         Direct Background reading (4)       30       NA         Direct Background reading (5)       22       NA         Direct Background reading (5)       22       NA         Direct Background reading (AVERAGE)       24       NA         Efficiency (= (CPM-Background) / DPM       FLAG (= 2X Background) SCANNING       FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING       450       14 000         MID-DAY BACKGROUND READING       20       20         EVENING SOURCE READING       500       3000         EVENING BACKGROUND READING       20       20         EVENING BACKGROUND READING       20       20         Morning check performed by       KW       NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Scan Background reading (only 1)     | NA        | NA           |
| Direct Background reading (1) $0.755$ $2.0$ NA         Direct Background reading (2) $2.0$ NA         Direct Background reading (3) $3.0$ NA         Direct Background reading (4) $3.0$ NA         Direct Background reading (5) $2.2$ NA         Direct Background reading (5) $2.2$ NA         Direct Background reading (AVERAGE) $2.4$ NA         Direct Background reading (AVERAGE) $2.4$ NA         Efficiency (= (CPM-Background) / DPM $$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                      |           |              |
| Direct Background reading (2)       20       NA         Direct Background reading (3)       30       NA         Direct Background reading (4)       30       NA         Direct Background reading (5)       20       NA         Direct Background reading (5)       20       NA         Direct Background reading (5)       20       NA         Direct Background reading (AVERAGE)       24       NA         Efficiency (= (CPM-Background) / DPM       HA       HA         FLAG (= 2X Background) SCANNING       HA       HA         FLAG (= 2X Background) DIRECT       450       14 000         MID-DAY SOURCE READING       20       20         EVENING SOURCE READING       500       13000         EVENING BACKGROUND READING       20       20         Morning check performed by       FUK       NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Direct Background reading (1) 2755   | 20        | NA           |
| Direct Background reading (3)       30       NA         Direct Background reading (4)       30       NA         Direct Background reading (5)       22       NA         Direct Background reading (5)       22       NA         Direct Background reading (AVERAGE)       24       NA         Efficiency (= (CPM-Background) / DPM       HA         FLAG (= 2X Background) SCANNING       HL         FLAG (= 2X Background) DIRECT       14 000         MID-DAY SOURCE READING       450       14 000         MID-DAY BACKGROUND READING       20       20         EVENING SOURCE READING       500       13000         EVENING BACKGROUND READING       20       20         Morning check performed by       FUK       NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Direct Background reading (2)        | 20        | NA           |
| Direct Background reading (4)       300       iNA         Direct Background reading (5)       220       NA*         Direct Background reading (AVERAGE)       24       NA         Direct Background reading (AVERAGE)       24       NA         Efficiency (= (CPM-Background) / DPM       10000       10000         FLAG (= 2X Background) SCANNING       10000       110000         FLAG (= 2X Background) DIRECT       110000       110000         MID-DAY SOURCE READING       450       140000         MID-DAY BACKGROUND READING       200       200         EVENING SOURCE READING       5000       130000         EVENING BACKGROUND READING       20       20         Morning check performed by       FUK       NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Direct Background reading (3)        | 30        | NA           |
| Direct Background reading (5)       22       NA'         Direct Background reading (AVERAGE)       24       NA         Efficiency (= (CPM-Background) / DPM       NA         FLAG (= 2X Background) SCANNING       HK         FLAG (= 2X Background) SCANNING       HK         MID-DAY SOURCE READING       450       14000         MID-DAY BACKGROUND READING       20       20         EVENING SOURCE READING       500       13000         EVENING BACKGROUND READING       20       20         Morning check performed by       K/K       NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Direct Background reading (4)        | 30        | İNA          |
| Direct Background reading (AVERAGE)       24       NA         Efficiency (= (CPM-Background) / DPM       FLAG (= 2X Background) SCANNING       FUK         FLAG (= 2X Background) DIRECT       FUK       14000         MID-DAY SOURCE READING       450       14000         MID-DAY BACKGROUND READING       20       20         EVENING SOURCE READING       500       13000         EVENING BACKGROUND READING       20       20         Morning check performed by       FUK       NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | )irect Background reading (5)        | 2.0       | NA'          |
| Efficiency (= (CPM-Background) / DPM         FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING       450         MID-DAY BACKGROUND READING       20         EVENING SOURCE READING       500         EVENING BACKGROUND READING       20         KORD       13000         EVENING BACKGROUND READING       20         Korning check performed by       FUK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Direct Background reading (AVERAGE)  | 24        | NA           |
| FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING       450         MID-DAY BACKGROUND READING       20         EVENING SOURCE READING       500         EVENING BACKGROUND READING       20         Korning check performed by       FUK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Efficiency (= (CPM-Background) / DPM |           |              |
| FLAG (= 2X Background) DIRECTMID-DAY SOURCE READING450MID-DAY BACKGROUND READING20EVENING SOURCE READING500EVENING BACKGROUND READING20Morning check performed byFUK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | LAG ( = 2X Background) SCANNING      | FIK       |              |
| MID-DAY SOURCE READING45014000MID-DAY BACKGROUND READING2020EVENING SOURCE READING50013000EVENING BACKGROUND READING2020Morning check performed byFUKNA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | LAG ( = 2X Background) DIRECT        |           |              |
| MID-DAY BACKGROUND READING     20     20       EVENING SOURCE READING     500     13000       EVENING BACKGROUND READING     20     20       Morning check performed by     FUK     NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      | 450       | 14000        |
| EVENING SOURCE READING     20     20       EVENING SOURCE READING     500     3000       EVENING BACKGROUND READING     20     20       Morning check performed by     FUK     NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                      | 20        | 20           |
| EVENING BACKGROUND READING 20 13000<br>EVENING BACKGROUND READING 20 20<br>Morning check performed by FUK NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                      | 500       | 12 12/1717   |
| Morning check performed by F/K NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                      | 20        | 12000        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Aorning check performed by           | K.K.      | NA           |
| Mid-day check performed by CKM 91/LM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Aid-day check performed by           | GRM       | 9.1CM        |
| Evening check performed by C // \AA C // M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Evening check performed by           | GILMA     | ÇII M        |

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| DATE: UI4/01                         |           | PAGE 7 OF 58 |
|--------------------------------------|-----------|--------------|
| Source                               | To-99     | Cs-137       |
| Source Type                          | Alpha     | Gamma ,      |
| Calibration Date                     | 4/3/2001  | 4/3/2001     |
| Out of Cal Date                      | 9/30/2001 | 9/30/2001    |
| Serial Number                        | 61457     | 61457        |
| Source emission rate                 | 0.05      | 0.01         |
|                                      | IVA       | IN/A         |
| High Voltage                         | - NA      | NA           |
| Battery Check                        | or        | OK           |
| Source Check Reading (1)             | 500       | 15000        |
| Source Check Reading (2)             | 400       | 14005        |
| Source Check Reading (3)             | 500       | 15300        |
| Source Check Reading (4)             | 576       | 14022        |
| Source Check Reading (5)             | 052       | 14000        |
| Source Check Reading (AVERAGE)       | 460       | 14400        |
| Material:                            | NA        | NA           |
| Scan Background reading (only 1)     | NA        | NA           |
|                                      | 1.        |              |
| Direct Background reading (1)        | 1.0       | <u>NA</u>    |
| Direct Background reading (2)        | 20        | NA           |
| Direct Background reading (3)        | L.V       | NA           |
| Direct Background reading (4)        | 30        | NA           |
| Direct Background reading (5)        | 30        | NA           |
| Direct Background reading (AVERAGE)  | 24        | NA           |
| Efficiency (= (CPM-Background) / DPM | NA        | NA           |
| FLAG ( = 2X Background) SCANNING     | NA        | NA           |
| FLAG ( = 2X Background) DIRECT       | NA        | NA           |
|                                      |           |              |
| MID-DAY SOURCE READING               | 400       | 14000        |
| MID-DAY BACKGROUND READING           | 20        | 20           |
| EVENING SOURCE READING               | 400       | 15000        |
| EVENING BACKGROUND READING           | 20        | 20           |
| Morning check performed by           | JK4 0750  | NA           |
| Mid-day check performed by           | EKM 1245  | NA           |
| Evening check performed by           | 4KM 1640  | NA           |

| DATE: 0/10/01                        |             | PAGE 8 OF 5 |
|--------------------------------------|-------------|-------------|
| Source                               | To 99       | Cs-137      |
| Source Type                          | Alpha       | Gamma       |
| Calibration Date                     | 4/3/2001    | 4/3/2001    |
| Out of Cal Date                      | 9/30/2001   | 9/30/2001   |
| Source emission rate                 | 0.05        | 0.01        |
| Instrument Channel                   | N/A         | N/A         |
| High Voltage                         | - NA        | - 11A       |
| Battery Check                        | or          | OK          |
| Source Check Reading (1)             | 400         | 14000       |
| Source Check Reading (2)             | 450         | 16000       |
| Source Check Reading (3)             | 400         | 15000       |
| Source Check Reading (4)             | 400         | 15000       |
| Source Check Reading (5)             | 450         | 15000       |
| Source Check Reading (AVERAGE)       | 420         | 15000       |
| Material:                            | NA          | NA          |
| Scan Background reading (only 1)     | NA          | NA          |
|                                      | 20          | 20          |
| Direct Background reading (1)        | 20          | 20          |
| Direct Background reading (2)        | 10          | 20          |
| Direct Background reading (3)        | 2.0         | 20          |
| Direct Background reading (4)        | 20          | 20          |
| Direct Background reading (5)        | 77          | 27          |
| Direct Background reading (AVERAGE)  |             | 60          |
| Efficiency (= (CPM-Background) / DPM |             |             |
| FLAG ( = 2X Background) SCANNING     | FUE         |             |
| FLAG ( = 2X Background) DIRECT       |             |             |
| MID-DAY SOURCE READING               | 600         | 15000       |
| MID-DAY BACKGROUND READING           | 20          | 20          |
| EVENING SOURCE READING               | EM20 2 2050 | 15000       |
| EVENING BACKGROUND READING           | 20          | 20          |
| Morning check performed by           | EKM         | ERIM        |
| Mid-day check performed by           | EKM         | EKM         |
| Evening check performed by           | EKM         | EKM         |

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| ſ   | DATE: 6/11/01                        |          | PAGE 9 OF SS   |
|-----|--------------------------------------|----------|----------------|
|     | Source                               | Tc-99    | Cs-137         |
|     | Source Type                          | Alpha    | Gamma          |
|     | Calibration Date                     | 4/3/2001 | 4/3/2001       |
|     | Serial Number                        | 61457    | 61457          |
|     | Source emission rate                 | 0.05     | 0.01           |
|     | Instrument Channel                   | N/A      | N/A            |
|     | High Voltage                         | - INA    | - NA           |
|     | Battery Check                        | ok       | oK             |
|     | Source Check Reading (1)             | 600      | 16000          |
|     | Source Check Reading (2)             | 500      | 15000          |
|     | Source Check Reading (3)             | 600      | 16000          |
|     | Source Check Reading (4)             | 500      | 16000          |
|     | Source Check Reading (5)             | 500      | 14000          |
|     | Source Check Reading (AVERAGE)       | 540      | 15400          |
|     | Material:                            | Fil      |                |
|     | Scan Background reading (only 1)     |          |                |
|     |                                      |          | 26             |
|     | Direct Background reading (1)        | 20       | 00             |
|     | Direct Background reading (2)        | 20       | 20             |
|     | Direct Background reading (3)        | 15       | 15             |
|     | Direct Background reading (4)        | 30       | 30             |
|     | Direct Background reading (5)        | 30       | 30             |
|     | Direct Background reading (AVERAGE)  | 23       | 23             |
|     | Efficiency (= (CPM-Background) / DPM |          |                |
|     | FLAG ( = 2X Background) SCANNING     | Fill     |                |
|     | FLAG ( = 2X Background) DIRECT       |          |                |
|     | MID-DAY SOURCE READING               | 500      | ( 6000         |
|     | MID-DAY BACKGROUND READING           | 20       | 20             |
|     | EVENING SOURCE READING               | 450      | EM +6000 15000 |
|     | EVENING BACKGROUND READING           | 30       | 30             |
| OSt | Morning check performed by           | 9.KM     | ELM            |
| 123 | 0 Mid-day check performed by         | JRU      | JKH            |
| 82  |                                      | EKM      | EKM            |

| 2475      | Panca | ke G-IVI Serial Nul                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | mber 01437/20037 |      |
|-----------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------|
| E:        | 6/12  | 01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |      |
| ie in the |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Tc 89            |      |
| e Ty      | pe    | And the second s | Alpha            | 20 2 |

| DATE: 6/12/01                        | The start will be from the start and | PAGE 10 OF S |
|--------------------------------------|--------------------------------------|--------------|
| Source                               | TC 99                                | Cs-137       |
| Collibration Date                    | Alpha                                | Gamma        |
| Out of Cal Date                      | 9/30/2001                            | 9/30/2001    |
| Serial Number                        | 61457                                | 61457        |
| Source emission rate                 | 0.05                                 | 0.01         |
| Instrument Channel                   | N/A                                  | N/A          |
| High Voltage                         | - NA                                 | - NA         |
| Battery Check                        | oil                                  | ok           |
| Source Check Reading (1)             | 400                                  | 14000        |
| Source Check Reading (2)             | 400                                  | 15000        |
| Source Check Reading (3)             | 500                                  | 14000        |
| Source Check Reading (4)             | 400                                  | 15000        |
| Source Check Reading (5)             | 400                                  | 15000        |
| Source Check Reading (AVERAGE)       | 420                                  | 14600        |
| Material:                            | culk                                 |              |
| Scan Background reading (only 1)     |                                      |              |
|                                      | ^                                    | 2.0          |
| Direct Background reading (1)        | 20                                   | 20           |
| Direct Background reading (2)        | 30                                   |              |
| Direct Background reading (3)        | 20                                   | 20           |
| Direct Background reading (4)        | 20                                   | 20           |
| Direct Background reading (5)        | 15                                   | 15           |
| Direct Background reading (AVERAGE)  | 21                                   | 21           |
| Efficiency (= (CPM-Background) / DPM |                                      |              |
| FLAG ( = 2X Background) SCANNING     | Elk                                  |              |
| FLAG ( = 2X Background) DIRECT       |                                      |              |
|                                      | EM/2000 two                          | 11-1-0       |
| MID-DAY SOURCE READING               | 2000 300                             | 15000        |
| MID-DAY BACKGROUND READING           | 100                                  | LO CAOD      |
| EVENING SOURCE READING               | 600                                  | 15000        |
| EVENING BACKGROUND READING           | <u>do</u>                            | <u> </u>     |
| Morning check performed by           | rku                                  | TUNNI<br>TUN |
| Mid-day check performed by           | ENM                                  | EKM          |
| Evening check performed by           | EKM                                  | EKM          |

#### CI AETIOCCET -- ---

| Pancake  | G-M   | Serial | Number | 61457 | 126657 |
|----------|-------|--------|--------|-------|--------|
| Faillake | G-IVI | Sella  | Number | 01407 | 120001 |

| DATE: 6/13/01                         |                 | PAGE NOF SB |  |
|---------------------------------------|-----------------|-------------|--|
| Source                                | Attention To-99 | Cs-137      |  |
| Source Type                           | Alpha           | Gamma       |  |
| Calibration Date                      | 4/3/2001        | 4/3/2001    |  |
| Out of Cal Date                       | 9/30/2001       | 9/30/2001   |  |
| Serial Number                         | 61457           | 61457       |  |
| Source emission rate                  | 0.05            | 0.01        |  |
|                                       | IN/A            | IN/A        |  |
| High Voltage                          | - VA            | - NA        |  |
| Battery Check                         | οK              | ok          |  |
| Source Check Reading (1)              | :000            | 14000       |  |
| Source Check Reading (2)              | 400             | 15000       |  |
| Source Check Reading (3)              | 400             | 14000       |  |
| Source Check Reading (4)              | 500             | 14000       |  |
| Source Check Reading (5)              | 600             | 14000       |  |
| Source Check Reading (AVERAGE)        | 500             | 14200       |  |
|                                       |                 |             |  |
| Material:                             | FUE             |             |  |
| Scan Background reading (only 1)      |                 |             |  |
| Direct Background reading (1)         | 10              | 10          |  |
| Direct Background reading (2)         | 30              | 30          |  |
| Direct Background reading (3)         | 20              | 20          |  |
| Direct Background reading (4)         | 10              | 10          |  |
| Direct Background reading (5)         | 20              | 20          |  |
| Direct Background reading (AVERAGE)   | 18              | 18          |  |
| Efficiency (n (CDM Declaration) ( DDM |                 |             |  |
|                                       | i de            |             |  |
| FLAG (= 2X Background) SCANNING       | Pue             |             |  |
| TLAG ( = 2A Background) DIRECT        |                 |             |  |
| MID-DAY SOURCE READING                | 400             | 15000       |  |
| MID-DAY BACKGROUND READING            | 20              | 20          |  |
| EVENING SOURCE READING                | not used in PM  | NA          |  |
| EVENING BACKGROUND READING            | NA              | NA          |  |
| Morning check performed by            | E14M 0700       | EKM 0700    |  |
| Mid-day check performed by            | EKM 1230        | EKM 1230    |  |
| Evening check performed by            | NA              | IVA         |  |

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| DATE: 6/18/01                        |                   | PAGE 12 OF 58 |
|--------------------------------------|-------------------|---------------|
| Source                               | Tc-99             | Cs-137        |
| Source Type                          | Alpha             | Gamma         |
| Calibration Date                     | 4/3/2001          | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001         | 9/30/2001     |
| Serial Number                        | 61457             | 61457         |
| Source emission rate                 | 0.05              | 0.01          |
| Instrument Channel                   | N/A               | N/A           |
| High Voltage                         | - NA              | NA            |
| Battery Check                        | ok                | OK            |
| Source Check Reading (1)             | KASSE 450         | 15,000        |
| Source Check Reading (2)             | 750               | 15,000        |
| Source Check Reading (3)             | 400               | 15,000        |
| Source Check Reading (4)             | 450               | 14,500        |
| Source Check Reading (5)             | 400               | 15,000        |
| Source Check Reading (AVERAGE)       | 490               | 14900         |
| Material:                            | ill               |               |
| Scan Background reading (only 1)     |                   |               |
|                                      |                   |               |
| Direct Background reading (1)        | 20                | 1 -20-        |
| Direct Background reading (2)        | 27.               |               |
| Direct Background reading (3)        | 15                | Junk          |
| Direct Background reading (4)        | 10                | X             |
| Direct Background reading (5)        | 10                |               |
| Direct Background reading (AVERAGE)  | 16.4              |               |
| Efficiency (= (CPM-Background) / DPM | V                 |               |
| FLAG ( = 2X Background) SCANNING     | FIF               |               |
| FLAG ( = 2X Background) DIRECT       |                   |               |
| MID-DAY SOURCE READING               | ND not used in AM | ND            |
| MID-DAY BACKGROUND READING           | IND               | N/D           |
| EVENING SOURCE READING               | at 440            | 1000          |
| EVENING BACKGROUND READING           | 20                | 20            |
| Morning check performed by           | 7mK 0930          | (nk 0130      |
| Mid-day check performed by           | NA                | NA            |
| Evening check performed by           | AMK 1736ms        | 1ml 1236      |

# (1457 /26657

# Pancake G-M Serial Number 61403/51751

| DATE: 6/19/01                        |                | PAGE B OF 58 |
|--------------------------------------|----------------|--------------|
| Source                               | Fc-99          | Cs-137       |
| Source Type                          | Alpha          | Gamma        |
| Calibration Date                     | 1/30/2001      | 1/30/2001    |
| Out of Cal Date                      | 7/29/2001      | 7/29/2001    |
| Serial Number                        | 61390          | 61390        |
| Source emission rate                 | 5.00%          | 1.00%        |
| Instrument Channel                   | N/A            | N/A          |
| High Voltage                         | NA             | NA           |
| Battery Check                        | ok             | OK           |
| Source Check Reading (1)             | 550            | 111,500      |
| Source Check Reading (2)             | 500            | 15,000       |
| Source Check Reading (3)             | 600            | 14,500       |
| Source Check Reading (4)             | 500            | 14,500       |
| Source Check Reading (5)             | 550            | 17,500       |
| Source Check Reading (AVERAGE)       | 540            | 1-1,600      |
| Material:                            | HIL.           |              |
| Scan Background reading (only 1)     |                |              |
|                                      |                |              |
| Direct Background reading (1)        | 30             | NA           |
| Direct Background reading (2)        | 20             | NA           |
| Direct Background reading (3)        | 20             | NA           |
| Direct Background reading (4)        | 20             | NA           |
| Direct Background reading (5)        | 40             | NA           |
| Direct Background reading (AVERAGE)  | 26 5=5         | NA           |
| Efficiency (= (CPM-Background) / DPM |                |              |
| FLAG ( = 2X Background) SCANNING     | FIL            |              |
| FLAG ( = 2X Background) DIRECT       |                |              |
|                                      |                |              |
| MID-DAY SOURCE READING               | not ased in AM | NA           |
| MID-DAY BACKGROUND READING           | NA             | NA           |
| EVENING SOURCE READING               | 15,000         | 13,000 Rom   |
| EVENING BACKGROUND READING           | 20             | 20           |
| Morning check performed by           | Ram + KS       | ill          |
| Mid-day check performed by           | NA             |              |
| Evening check performed by           | JRH 1650       |              |

# 61457/26657 Pancake G-M Serial Number <del>61403/51751\_\_\_\_</del>

| DATE: 6/20/01                        |                | PAGE 14 OF 58 |
|--------------------------------------|----------------|---------------|
| Source                               | Tc-99          | Cs-137        |
| Source Type                          | Alpha          | Gamma         |
| Calibration Date                     | 1/30/2001      | 1/30/2001     |
| Out of Cal Date                      | 7/29/2001      | 7/29/2001     |
| Serial Number                        | 61390          | 61390         |
| Source emission rate                 | 5.00%          | N/A           |
|                                      |                |               |
| High Voltage                         | NA             | NA            |
| Battery Check                        | OK             | OK            |
| Source Check Reading (1)             | 550            | 15 K          |
| Source Check Reading (2)             | 500            | 14.5 K        |
| Source Check Reading (3)             | 550            | 14.5 15       |
| Source Check Reading (4)             | 550            | 14 K          |
| Source Check Reading (5)             | 550            | 14.514        |
| Source Check Reading (AVERAGE)       | 540            | 14.5K         |
|                                      |                |               |
| Material:                            | KIK            |               |
| Scan Background reading (only 1)     |                |               |
|                                      |                |               |
| Direct Background reading (1)        | 20             | NA            |
| Direct Background reading (2)        | 20             | NA            |
| Direct Background reading (3)        | 20             | NA            |
| Direct Background reading (4)        | 20             | NA            |
| Direct Background reading (5)        | 20             | NA            |
| Direct Background reading (AVERAGE)  | 20             | NA            |
| Efficiency (= (CPM Background) / DPM |                |               |
| El AC (= 22 Background) SCANNING     | at             |               |
|                                      |                |               |
| FLAG (= 2X Background) DIRECT        |                |               |
| MID-DAY SOURCE READING               | NOT USED IN AM | NA            |
| MID-DAY BACKGROUND READING           | teruc          | NA            |
| EVENING SOURCE READING               | 400            | 1515          |
| EVENING BACKGROUND READING           | 10             | 10            |
| Morning check performed by           | KIK            | NA            |
| Mid-day check performed by           | NA             | NA            |
| Evening check performed by           | NA             | 1445 1720     |

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| DATE: \$ 21 01                       |               | PAGE15 OF 58 |
|--------------------------------------|---------------|--------------|
| Source                               | Tc-99         | Cs-137       |
| Source Type                          | Alpha         | Gamma        |
| Calibration Date                     | 4/3/2001      | 4/3/2001     |
| Out of Cal Date                      | 9/30/2001     | 9/30/2001    |
| Serial Number                        | 61457         | 61457        |
| Source emission rate                 | 0.05          | 0.01         |
| Instrument Channel                   | N/A           | N/A          |
| High Voltage                         | WA            | NA           |
| Battery Check                        | ot            | OK           |
| Source Check Reading (1)             | US-137: 15000 | TC-99: 500   |
| Source Check Reading (2)             | (5000         | 500          |
| Source Check Reading (3)             | 15000         | 500          |
| Source Check Reading (4)             | 15000         | 500          |
| Source Check Reading (5)             | (5000         | 500          |
| Source Check Reading (AVERAGE)       | 15000         | .500         |
| Material:                            | KUK           |              |
| Scan Background reading (only 1)     |               |              |
|                                      |               |              |
| Direct Background reading (1)        | 20            | NA           |
| Direct Background reading (2)        | 20            | NA           |
| Direct Background reading (3)        | 10            | NA           |
| Direct Background reading (4)        | 20            | NA           |
| Direct Background reading (5)        | 10            | NA           |
| Direct Background reading (AVERAGE)  | 16            | NA           |
| Efficiency (= (CPM-Background) / DPM |               |              |
| FLAG ( = 2X Background) SCANNING     | KIK           |              |
| FLAG ( = 2X Background) DIRECT       |               |              |
|                                      | 4             |              |
| MID-DAY SOURCE READING               | 20 Sperm      | 5 Rom        |
| MID-DAY BACKGROUND READING           | 16,000 6      | 500'         |
| EVENING SOURCE READING               | 15,000        | 500          |
| EVENING BACKGROUND READING           | 20            | NA           |
| Morning check performed by           | Mry 0715      |              |
| Mid-day check performed by           | Rom 12:35p    | Els          |
| Evening check performed by           | Rom 5:30p     |              |

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| DATE: 6/22/21                        |                                                                                                                 | PAGE 16 OF 58 |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|
| Source                               | Ices ( 1-137                                                                                                    | 05-137 Te-99  |
| Source Type                          | Alpha                                                                                                           | Gamma 06      |
| Calibration Date                     | 4/3/2001                                                                                                        | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001                                                                                                       | 9/30/2001     |
| Serial Number                        | 61457                                                                                                           | 61457         |
| Source emission rate                 | 0.05                                                                                                            | 0.01          |
| Instrument Channel                   | N/A                                                                                                             | N/A           |
| High Voltage                         | ot NA                                                                                                           | NA            |
| Battery Check                        | olc                                                                                                             | NA            |
| Source Check Reading (1)             | 16,000                                                                                                          | 600           |
| Source Check Reading (2)             | 15,000                                                                                                          | 500           |
| Source Check Reading (3)             | 15,000                                                                                                          | 600           |
| Source Check Reading (4)             | 15,000                                                                                                          | 500           |
| Source Check Reading (5)             | 15,000                                                                                                          | 500           |
| Source Check Reading (AVERAGE)       | 15,200                                                                                                          | 540           |
| Material:                            | VI V.                                                                                                           |               |
| Scan Background reading (only 1)     | m                                                                                                               |               |
|                                      |                                                                                                                 |               |
| Direct Background reading (1)        | 20                                                                                                              | NA            |
| Direct Background reading (2)        | 30                                                                                                              | NA            |
| Direct Background reading (3)        | 30                                                                                                              | NA            |
| Direct Background reading (4)        | 20                                                                                                              | NA            |
| Direct Background reading (5)        | 20                                                                                                              | NA            |
| Direct Background reading (AVERAGE)  | 24                                                                                                              | 114           |
| Efficiency (= (CPM-Background) / DPM |                                                                                                                 |               |
| FLAG ( = 2X Background) SCANNING     | KUR                                                                                                             |               |
| FLAG ( = 2X Background) DIRECT       | Non and the second s |               |
|                                      | 15:000                                                                                                          | 00            |
|                                      | 70                                                                                                              | 1/4           |
| MID-DAY BACKGROUND READING           | 60                                                                                                              | Sah           |
|                                      | 15,000                                                                                                          | 100           |
| EVENING BACKGROUND READING           | 20                                                                                                              | NA.           |
| Morning check performed by           | Rom 1:03 a                                                                                                      | Vill          |
| Mid-day check performed by           | KOM 12:25 p                                                                                                     | - F           |
| Evening check performed by           | Kam S:10 R                                                                                                      | /             |

| DATE: 6/23/01                                  |                           | PAGE/7 OF \$8  |
|------------------------------------------------|---------------------------|----------------|
| Sources all Harry Statements - Charles - Alles | Mandation al Jage Cos-137 | Cs-18 T1-99 01 |
| Source Type                                    | Alpha                     | Gamma          |
| Calibration Date                               | 4/3/2001                  | 4/3/2001       |
| Out of Cal Date                                | 9/30/2001                 | 9/30/2001      |
| Serial Number                                  | 61457                     | 61457          |
| Source emission rate                           | 0.05                      | 0.01           |
| Instrument Channel                             | N/A                       | N/A            |
| High Voltage                                   | OKNA                      | NA             |
| Battery Check                                  | ok                        | OK             |
| Source Check Reading (1)                       | 15,000                    | 600            |
| Source Check Reading (2)                       | 15,000                    | 500            |
| Source Check Reading (3)                       | 15,000                    | 600            |
| Source Check Reading (4)                       | 15,00%                    | 500            |
| Source Check Reading (5)                       | 15,000                    | 500            |
| Source Check Reading (AVERAGE)                 | 15,000                    | 540            |
| Material:                                      | NKU NKU                   | Ł              |
| Scan Background reading (only 1)               |                           |                |
|                                                |                           |                |
| Direct Background reading (1)                  | 20                        | NA             |
| Direct Background reading (2)                  | 20                        | NA             |
| Direct Background reading (3)                  | 30                        | NA             |
| Direct Background reading (4)                  | 20                        | NA             |
| Direct Background reading (5)                  | 30                        | NA             |
| Direct Background reading (AVERAGE)            | 24                        | NA             |
| Efficiency (= (CPM-Background) / DPM           |                           |                |
| FLAG ( = 2X Background) SCANNING               | NUL                       |                |
| FLAG ( = 2X Background) DIRECT                 |                           |                |
|                                                | 15000                     | 600            |
| MID-DAY SOURCE READING                         | 20                        | 500            |
| MID-DAY BACKGROUND READING                     | 10                        | N/A<br>E=0     |
| EVENING SOURCE READING                         | 16,000                    | 500            |
| EVENING BACKGROUND READING                     | 20                        | NA             |
| Morning check performed by                     | 100m 0000 a               | 1 NH           |
| Mid-day check performed by                     | 10m (2:10 p               |                |
| Evening check performed by                     | 104:16P                   |                |

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| DATE: 6/24(01                        |            | PAGE PAGE OF 58 |
|--------------------------------------|------------|-----------------|
| Source                               | Te-99      | Cs-137          |
| Source Type                          | Alpha      | Gamma           |
| Calibration Date                     | 4/3/2001   | 4/3/2001        |
| Out of Cal Date                      | 9/30/2001  | 9/30/2001       |
| Serial Number                        | 61457      | 61457           |
| Source emission rate                 | - 0.05     | 0.01            |
| Instrument Channel                   | N/A        | N/A             |
| High Voltage                         | NA         | NA              |
| Battery Check                        | ok         | OK              |
| Source Check Reading (1)             | 500        | 15,000          |
| Source Check Reading (2)             | 500        | 15,000          |
| Source Check Reading (3)             | 500        | 15,000          |
| Source Check Reading (4)             | 500        | 15,000          |
| Source Check Reading (5)             | 500        | 15,000          |
| Source Check Reading (AVERAGE)       | 500        | 15,000          |
| Material:                            | Y          | UN              |
| Scan Background reading (only 1)     |            |                 |
|                                      |            |                 |
| Direct Background reading (1)        | 20         |                 |
| Direct Background reading (2)        | 20         |                 |
| Direct Background reading (3)        | 20         | 1100 Maria      |
| Direct Background reading (4)        | 20         | Y               |
| Direct Background reading (5)        | 20         | /               |
| Direct Background reading (AVERAGE)  | 20         |                 |
| Efficiency (= (CPM-Background) / DPM |            |                 |
| FLAG ( = 2X Background) SCANNING     | and        |                 |
| FLAG (= 2X Background) DIRECT        |            |                 |
|                                      |            |                 |
| MID-DAY SOURCE READING               | 500        | 15,000          |
| MID-DAY BACKGROUND READING           | 20         | NA              |
| EVENING SOURCE READING               | 500        | 15,000          |
| EVENING BACKGROUND READING           | 30         | NA              |
| Morning check performed by           | Rm 0715a   | No.             |
| Mid-day check performed by           | Rm 12:00p  | Killer .        |
| Evening check performed by           | pom 3:23 n |                 |

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| DATE: 6/25/21                                                                                                  |                  | PAGE/9 OF 58                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source                                                                                                         | Tc-99            | Cs-137                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Type                                                                                                    | Alpha            | Gamma                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Calibration Date                                                                                               | 4/3/2001         | 4/3/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Out of Cal Date                                                                                                | 9/30/2001        | 9/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Serial Number                                                                                                  | 61457            | 61457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source emission rate                                                                                           | 0.05             | 0.01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Instrument Channel                                                                                             | N/A              | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| High Voltage                                                                                                   | A/A              | MA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Battery Check                                                                                                  | olc              | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (1)                                                                                       | 500              | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (2)                                                                                       | 500              | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (3)                                                                                       | 500              | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (4)                                                                                       | 500              | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (5)                                                                                       | 500              | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (AVERAGE)                                                                                 | 500              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Material:                                                                                                      | KUK              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Scan Background reading (only 1)                                                                               |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| the second s |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (1)                                                                                  | 20               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (2)                                                                                  | 20               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (3)                                                                                  | 30               | W/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (4)                                                                                  | 30               | the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Direct Background reading (5)                                                                                  | 20               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (AVERAGE)                                                                            | 24               | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Efficiency (= (CPM Background) / DPM                                                                           |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ELAG (= 2X Background) SCANNING                                                                                | KUL              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ELAG (= 2X Background) DIRECT                                                                                  |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| En Buorgiouna, Birteor                                                                                         |                  | A REAL PROPERTY AND A REAL |
| MID-DAY SOURCE READING                                                                                         | 500              | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| MID-DAY BACKGROUND READING                                                                                     | 20               | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| EVENING SOURCE READING                                                                                         | 500              | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| EVENING BACKGROUND READING                                                                                     | 20               | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Morning check performed by                                                                                     | R. m 7:10 60-70' |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Mid-day check performed by                                                                                     | Rom 12:00,       | Van                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Evening check performed by                                                                                     | RTIM 51300       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

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| DATE: 6/26/01                        |                                                                                                                  | PAGE 20 OF 58      |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------|
| Source                               | To-99                                                                                                            | Cs-137             |
| Source Type                          | Alpha                                                                                                            | Gamma              |
| Calibration Date                     | 4/3/2001                                                                                                         | 4/3/2001           |
| Out of Cal Date                      | 9/30/2001                                                                                                        | 9/30/2001          |
| Serial Number                        | 61457                                                                                                            | 61457              |
| Source emission rate                 | 0.05                                                                                                             | 0.01               |
| Instrument Channel                   | N/A                                                                                                              | N/A                |
| High Voltage                         | NIA                                                                                                              | NA                 |
| Battery Check                        | OK                                                                                                               | OIL                |
| Source Check Reading (1)             | 500                                                                                                              | 14.506             |
| Source Check Reading (2)             | 500                                                                                                              | 14,000             |
| Source Check Reading (3)             | 200                                                                                                              | 14,000             |
| Source Check Reading (4)             | 520                                                                                                              | 17,000             |
| Source Check Reading (5)             | 500                                                                                                              | 14,500             |
| Source Check Reading (AVERAGE)       | 500                                                                                                              | (y, 200            |
| Material:                            | :W                                                                                                               |                    |
| Scan Background reading (only 1)     | and the second |                    |
|                                      |                                                                                                                  |                    |
| Direct Background reading (1)        | 20                                                                                                               |                    |
| Direct Background reading (2)        | 15                                                                                                               | /                  |
| Direct Background reading (3)        | 15                                                                                                               | int                |
| Direct Background reading (4)        | 15                                                                                                               | /                  |
| Direct Background reading (5)        | 15                                                                                                               | /                  |
| Direct Background reading (AVERAGE)  | 16                                                                                                               | 5                  |
| Efficiency (= (CPM-Background) / DPM |                                                                                                                  |                    |
| FLAG ( = 2X Background) SCANNING     | LUL                                                                                                              |                    |
| FLAG ( = 2X Background) DIRECT       |                                                                                                                  |                    |
| MID-DAY SOURCE READING               | 550 5                                                                                                            | 14,000 Jule        |
| MID-DAY BACKGROUND READING           | 20                                                                                                               | NA                 |
| EVENING SOURCE READING               | WATCH 14 Detes 500 SPC                                                                                           | H. COU (WE. 4, 500 |
| EVENING BACKGROUND READING           | ìÐ                                                                                                               | 30                 |
| Morning check performed by           | 14KS clear, dry, 68°F                                                                                            | . /                |
| Mid-day check performed by           | 12KS "                                                                                                           | Fue                |
| Evening check performed by           | June                                                                                                             |                    |

| DATE: \$/27/01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                 | PAGE 21 OF ST         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------|
| Source states to the other states and the second states and the se | TC-99"                                                                                                          | 1-1,- J. Cs-137 4. 14 |
| Source Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Alpha                                                                                                           | Gamma                 |
| Calibration Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4/3/2001                                                                                                        | 4/3/2001              |
| Out of Cal Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9/30/2001                                                                                                       | 9/30/2001             |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 61457                                                                                                           | 61457                 |
| Source emission rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.05                                                                                                            | 0.01                  |
| Instrument Channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | N/A                                                                                                             | N/A                   |
| High Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | of KIK INA                                                                                                      | NA                    |
| Battery Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ok                                                                                                              | ok                    |
| Source Check Reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                                                                                                             | R515,000              |
| Source Check Reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                                                                                                             | 15,000                |
| Source Check Reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                                                                                                             | 15,000                |
| Source Check Reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                                                                                                             | 15,000                |
| Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500                                                                                                             | 15,000                |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 500                                                                                                             | 15,000                |
| Material:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ev.                                                                                                             | Ł                     |
| Scan Background reading (only 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | The second se |                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                       |
| Direct Background reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                              | /                     |
| Direct Background reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                              | /                     |
| Direct Background reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                              |                       |
| Direct Background reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                              | W.                    |
| Direct Background reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                              | /                     |
| Direct Background reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 20                                                                                                              | /                     |
| Efficiency (= (CPM-Background) / DPM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                 |                       |
| FLAG ( = 2X Background) SCANNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | VUI                                                                                                             |                       |
| FLAG ( = 2X Background) DIRECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                 |                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | tac                                                                                                             | 15000                 |
| MID-DAY SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 700                                                                                                             | 15,000                |
| MID-DAY BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10                                                                                                              | NA                    |
| EVENING SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 500                                                                                                             | 15,000                |
| EVENING BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 20                                                                                                              | NA                    |
| Morning check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 120m 07:052 50000                                                                                               | , tit                 |
| Mid-day check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Rom 12:320 78                                                                                                   | M.                    |
| Evening check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | JRH 1735                                                                                                        |                       |

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| DATE: 6/28/01                        |           | PAGE 22-OF 58                                                                                                   |
|--------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------|
| Source                               | Tc-99-    | CS-137                                                                                                          |
| Source Type                          | Alpha     | Gamma                                                                                                           |
| Calibration Date                     | 4/3/2001  | 4/3/2001                                                                                                        |
| Out of Cal Date                      | 9/30/2001 | 9/30/2001                                                                                                       |
| Serial Number                        | 61457     | 61457                                                                                                           |
| Source emission rate                 | 0.05      | 0.01                                                                                                            |
| Instrument Channel                   | N/A       | N/A                                                                                                             |
| High Voltage                         | MA        | NA                                                                                                              |
| Battery Check                        | OK        | OK                                                                                                              |
| Source Check Reading (1)             | .500      | 15,000                                                                                                          |
| Source Check Reading (2)             | 500       | 15,000                                                                                                          |
| Source Check Reading (3)             | 500       | 17,500                                                                                                          |
| Source Check Reading (4)             | 500       | 15,000                                                                                                          |
| Source Check Reading (5)             | 500       | 15,000                                                                                                          |
| Source Check Reading (AVERAGE)       | 500       | 14,500                                                                                                          |
| Material:                            |           | IL                                                                                                              |
| Scan Background reading (only 1)     | V         | ~                                                                                                               |
|                                      |           | A DESCRIPTION OF THE OWNER OF THE |
| Direct Background reading (1)        | 200       | /                                                                                                               |
| Direct Background reading (2)        | 150       |                                                                                                                 |
| Direct Background reading (3)        | 2 00      | W                                                                                                               |
| Direct Background reading (4)        | 200       | U.                                                                                                              |
| Direct Background reading (5)        | 200       |                                                                                                                 |
| Direct Background reading (AVERAGE)  | 190       |                                                                                                                 |
| Efficiency (= (CPM-Background) / DPM |           |                                                                                                                 |
| FLAG ( = 2X Background) SCANNING     | K         | N                                                                                                               |
| FLAG ( = 2X Background) DIRECT       |           |                                                                                                                 |
| MID-DAY SOURCE READING               | 500       | 15.000                                                                                                          |
|                                      | 70        | THERE I KULL                                                                                                    |
|                                      | SNO       | 14 500                                                                                                          |
| EVENING BACKGROUND READING           | 20        | NA                                                                                                              |
| Morning check performed by           | KKKS      | 68°F. Clem, Haza                                                                                                |
| Mid-day check performed by           | Rom 12:10 | Durer cast                                                                                                      |
| Evening check performed by           | AUL 1720  | clure 70°F                                                                                                      |

| DATE: 6/29/01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       | PAGE23 OF 58 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|
| Source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Tc-99                 | Cs-137       |
| Source Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | . Alpha               | Gamma        |
| Calibration Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4/3/2001              | 4/3/2001     |
| Out of Cal Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 9/30/2001             | 9/30/2001    |
| Source emission rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.05                  | 61457        |
| Instrument Channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A                   | 0.01<br>N/A  |
| High Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | MA                    | NA           |
| Battery Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | OK                    | OK           |
| Source Check Reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 400                   | 16,000       |
| Source Check Reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 500                   | 15,000       |
| Source Check Reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 500                   | 15,000       |
| Source Check Reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 500                   | 15,000       |
| Source Check Reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 500                   | 15,000       |
| Source Check Reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 480                   | 15,200       |
| Material:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | للان                  |              |
| Scan Background reading (only 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |              |
| A STATE OF A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                       |              |
| Direct Background reading (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 20                    |              |
| Direct Background reading (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 20                    |              |
| Direct Background reading (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 20                    | W/           |
| Direct Background reading (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 20                    | y            |
| Direct Background reading (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 20                    | /            |
| Direct Background reading (AVERAGE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 20                    | /            |
| Efficiency (= (CPM-Background) / DPM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                       |              |
| FLAG ( = 2X Background) SCANNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | USP                   |              |
| FLAG ( = 2X Background) DIRECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                       |              |
| A CONTRACT OF A | - ^ A                 |              |
| MID-DAY SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500                   | 15,000       |
| MID-DAY BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 20                    | NA           |
| EVENING SOURCE READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500                   | (7000        |
| EVENING BACKGROUND READING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 20                    | NA           |
| Morning check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2m 07:10 a 402 300 my | 111/         |
| Mid-day check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | KKS 1130              | Vu           |
| Evening check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | JRL1 1541             |              |

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| DATE: 7/9/01                         |           | PAGE 24 OF 1 58 |
|--------------------------------------|-----------|-----------------|
| Source                               | Tc-99     | Cs-137          |
| Source Type                          | Alpha     | Gamma           |
| Calibration Date                     | 4/3/2001  | 4/3/2001        |
| Out of Cal Date                      | 9/30/2001 | 9/30/2001       |
| Serial Number                        | 61457     | 61457           |
| Source emission rate                 | 0.05      | 0.01            |
| Instrument Channel                   | N/A       | N/A             |
| High Voltage                         | NA        |                 |
| Battery Check                        | Yes       | i5,000          |
| Source Check Reading (1)             | 500       | 15,000          |
| Source Check Reading (2)             | 500       | 15,000          |
| Source Check Reading (3)             | 500       | 15,000          |
| Source Check Reading (4)             | 550       | 15,000          |
| Source Check Reading (5)             | 500       | 15,000          |
| Source Check Reading (AVERAGE)       | 510       | 15,000          |
| Material:                            | YUX.      |                 |
| Scan Background reading (only 1)     |           |                 |
|                                      | 4         |                 |
| Direct Background reading (1)        | 20        |                 |
| Direct Background reading (2)        | 20        |                 |
| Direct Background reading (3)        | 30        | i W             |
| Direct Background reading (4)        | 30        | /               |
| Direct Background reading (5)        | 20        |                 |
| Direct Background reading (AVERAGE)  | 24        |                 |
| Efficiency (= (CPM-Background) / DPM |           |                 |
| ELAG ( = 2X Background) SCANNING     | the       |                 |
| FLAG (= 2X Background) DIRECT        |           |                 |
|                                      |           |                 |
| MID-DAY SOURCE READING               | 550       | 15,000          |
| MID-DAY BACKGROUND READING           | 20        | +5,00 KIK       |
| EVENING SOURCE READING               | 550       | NA              |
| EVENING BACKGROUND READING           | 20        | 15,000          |
| Morning check performed by           | KKS 0800  |                 |
| Mid-day check performed by           | AML USD   | VIII            |
| Evening check performed by           | KICS 1748 |                 |

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| DATE: 7/10/01                        |                    | PAGE 25 OF 58 |
|--------------------------------------|--------------------|---------------|
| Source                               | Tc-99              | Cs-137        |
| Source Type                          | Alpha              | Gamma         |
| Calibration Date                     | 4/3/2001           | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001          | 9/30/2001     |
| Serial Number                        | 61457              | 61457         |
| Source emission rate                 | 0.05               | 0.01          |
| Instrument Channel                   | N/A                | N/A           |
| High Voltage                         | NA                 | NA            |
| Battery Check                        | oK                 | 15,000 king   |
| Source Check Reading (1)             | 500                | 15,000        |
| Source Check Reading (2)             | 500                | 15,000        |
| Source Check Reading (3)             | 500                | 15,000        |
| Source Check Reading (4)             | 500                | 15,000        |
| Source Check Reading (5)             | 500                | 15,000        |
| Source Check Reading (AVERAGE)       | 500                | 15,000        |
|                                      |                    |               |
| Material:                            | ill                |               |
| Scan Background reading (only 1)     |                    |               |
|                                      |                    |               |
| Direct Background reading (1)        | 30                 | ION NA        |
| Direct Background reading (2)        | 20                 | NA            |
| Direct Background reading (3)        | 30                 | NA            |
| Direct Background reading (4)        | 20                 | NA            |
| Direct Background reading (5)        | 30                 | NA            |
| Direct Background reading (AVERAGE)  | 26                 | NA            |
| Efficiency (= (CPM-Background) / DPM |                    |               |
| FLAG ( = 2X Background) SCANNING     | KUL                |               |
| FLAG ( = 2X Background) DIRECT       |                    |               |
|                                      |                    |               |
| MID-DAY SOURCE READING               | 500                | 14,000        |
| MID-DAY BACKGROUND READING           | 20                 | MA            |
| EVENING SOURCE READING               | 500                | 14,000        |
| EVENING BACKGROUND READING           | 20                 | NA            |
| Morning check performed by KKS       | cloudy, hunid, 70° |               |
| Mid-day check performed by KKS       | 1215               | V             |
| Evening check performed by por-      | 5:30 78° Sunny     |               |

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| DATE: 7/11/01                        |                                                                                                                | PAGE OF 58 |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------|------------|
| Source                               | Tc-99                                                                                                          | Cs-137     |
| Source Type                          | Alpha                                                                                                          | Gamma      |
| Calibration Date                     | 4/3/2001                                                                                                       | 4/3/2001   |
| Out of Cal Date                      | 9/30/2001                                                                                                      | 9/30/2001  |
| Serial Number                        | 61457                                                                                                          | 61457      |
| Source emission rate                 | 0.05                                                                                                           | 0.01       |
| Instrument Channel                   | N/A                                                                                                            | N/A        |
| High Voltage                         | NA                                                                                                             | NA         |
| Battery Check                        | OK                                                                                                             | ·0<        |
| Source Check Reading (1)             | 500                                                                                                            | , 14,000   |
| Source Check Reading (2)             | 600                                                                                                            | 14,000     |
| Source Check Reading (3)             | 570                                                                                                            | 17,000     |
| Source Check Reading (4)             | 400                                                                                                            | 17,000     |
| Source Check Reading (5)             | 500                                                                                                            | 17,000     |
| Source Check Reading (AVERAGE)       | 500                                                                                                            | 14,000     |
| Madaniali                            |                                                                                                                |            |
| Material                             | 00                                                                                                             |            |
| Scan Background reading (only 1)     | - Con-state of the and the second |            |
| Direct Background reading (1)        | 30                                                                                                             |            |
| Direct Background reading (2)        | 30                                                                                                             |            |
| Direct Background reading (3)        | 20                                                                                                             | W          |
| Direct Background reading (4)        | 30                                                                                                             | Mar .      |
| Direct Background reading (5)        | 20                                                                                                             |            |
| Direct Background reading (AVERAGE)  | -2055 FUL 26                                                                                                   | /          |
| Efficiency (= (CPM-Background) / DPM |                                                                                                                |            |
| FLAG ( = 2X Background) SCANNING     | ill                                                                                                            |            |
| FLAG ( = 2X Background) DIRECT       |                                                                                                                |            |
| MID-DAY SOURCE READING               | 20                                                                                                             | NA         |
| MID-DAY BACKGROUND READING           | 500 14c)                                                                                                       | 14.000     |
| EVENING SOURCE READING               | 500                                                                                                            | 14.000     |
| EVENING BACKGROUND READING           | 20                                                                                                             | NA         |
| Morning check performed by           | 68°F Sinny, Bolo Winking                                                                                       |            |
| Mid-day check performed by           | I W                                                                                                            | HUL        |
| Evening check performed by KUL       |                                                                                                                |            |

| DATE: 7/12/01                        |                 | PAGED OF SA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source                               | eeaTc-99        | Cs-137                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Source Type                          | Alpha           | Gamma                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Calibration Date                     | 4/3/2001        | 4/3/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Out of Cal Date                      | 9/30/2001       | 9/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Serial Number                        | 61457           | 61457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source emission rate                 | 0.05            | 0.01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                      | N/A             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| High Voltage                         | - NA            | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Battery Check                        | 014             | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Source Check Reading (1)             | 500             | 15 000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Source Check Reading (2)             | 500             | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Source Check Reading (3)             | 500             | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Source Check Reading (4)             | 500             | 14,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Source Check Reading (5)             | 500             | 600, 41                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (AVERAGE)       | 500             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Material:                            | VIV             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Scan Background reading (only 1)     |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                      |                 | and the second se |
| Direct Background reading (1)        | 20              | X /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Direct Background reading (2)        | 30              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Direct Background reading (3)        | 20              | . il                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (4)        | 20              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Direct Background reading (5)        | 30              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Direct Background reading (AVERAGE)  | 24              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Les and Les and                      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Efficiency (= (CPM-Background) / DPM |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FLAG ( = 2X Background) SCANNING     | Ull             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FLAG ( = 2X Background) DIRECT       |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                      | (11)            | ίμορο                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| MID-DAY SOURCE READING               | 500             | 19000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| MID-DAY BACKGROUND READING           | 20              | - KUIU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| EVENING SOURCE READING               | 500             | 15000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| EVENING BACKGROUND READING           | 20              | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Morning check performed by ICICS     | 60°F, Sung, Dry |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Mid-day check performed by           | -1RH + 1150     | (un                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Evening check performed by           | AMU 1735        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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| DATE: 7/13/01                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE28 OF 58 |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Source                               | the state of the second st | Cs-137       |
| Source Type                          | Alpha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Gamma        |
| Calibration Date                     | 4/3/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4/3/2001     |
| Out of Cal Date                      | 9/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 9/30/2001    |
| Serial Number                        | 61457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 61457        |
| Source emission rate                 | 0.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.01         |
|                                      | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A          |
| High Voltage                         | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NIX          |
| Battery Check                        | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OK           |
| Source Check Reading (1)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 14,000       |
| Source Check Reading (2)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 14,000       |
| Source Check Reading (3)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 14,000       |
| Source Check Reading (4)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 14,000       |
| Source Check Reading (5)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 14,000.      |
| Source Check Reading (AVERAGE)       | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 14,000       |
| Material:                            | - July                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Scan Background reading (only 1)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | T            |
| Direct Background reading (1)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | W-14000      |
| Direct Background reading (2)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |
| Direct Background reading (3)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 Miles      |
| Direct Background reading (4)        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ¥7           |
| Direct Background reading (5)        | EO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |
| Direct Background reading (AVERAGE)  | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | /            |
| Efficiency (= (CPM-Background) / DPM |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |
| FLAG ( = 2X Background) SCANNING     | ill                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |
| FLAG ( = 2X Background) DIRECT       | monormany                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |
|                                      | (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 111 DDD      |
| MID-DAY SOURCE READING               | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1900         |
| MID-DAY BACKGROUND READING           | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Nr III OCO   |
| EVENING SOURCE READING               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 14,000       |
| EVENING BACKGROUND READING           | HELL LOKU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA           |
| Morning check performed by Pics      | 68 F. Part Clade, dry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 111          |
| Mid-day check performed by           | JMK 70° PL dog                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |
| Evening check performed by           | HL 10°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | /            |

| DATE: 7/14/01                        |                | PAGE29 OF 58                            |
|--------------------------------------|----------------|-----------------------------------------|
| Source                               | Tc=99          | Cs-137                                  |
| Source Type                          | Alpha          | Gamma                                   |
| Calibration Date                     | 4/3/2001       | 4/3/2001                                |
| Out of Cal Date                      | 9/30/2001      | 9/30/2001                               |
| Serial Number                        | 6145/          | 61457                                   |
| Instrument Channel                   | 0.05<br>N/A    | N/A                                     |
| High Voltage                         | - Of WA        | NA                                      |
| Battery Check                        | ok             | OK                                      |
| Source Check Reading (1)             | 500            | 15,000                                  |
| Source Check Reading (2)             | 500            | 15,000                                  |
| Source Check Reading (3)             | 500            | 15,000                                  |
| Source Check Reading (4)             | 500            | 15,000                                  |
| Source Check Reading (5)             | 500            | 15,000                                  |
| Source Check Reading (AVERAGE)       | 500            | 15,000                                  |
| Material:                            | YUL            |                                         |
| Scan Background reading (only 1)     | F              |                                         |
|                                      |                |                                         |
| Direct Background reading (1)        | 20             | /                                       |
| Direct Background reading (2)        | 20             |                                         |
| Direct Background reading (3)        | 20             | . W                                     |
| Direct Background reading (4)        | 20             | Y                                       |
| Direct Background reading (5)        | 20             | /                                       |
| Direct Background reading (AVERAGE)  | 20             | /                                       |
| Efficiency (= (CPM-Background) / DPM |                |                                         |
| FLAG ( = 2X Background) SCANNING     | Lut            |                                         |
| FLAG ( = 2X Background) DIRECT       |                |                                         |
|                                      | toin           | 15.000                                  |
| MID-DAY SOURCE READING               | 200            | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| MID-DAY BACKGROUND READING           |                | NA                                      |
| EVENING SOURCE READING               | her used in PM | NA                                      |
| EVENING BACKGROUND READING           | NH 1.0         | IVA                                     |
| Mid day shock performed by Kam       | T 100          | , UI                                    |
| wind-day check performed by KVM      | USERCASE 60    |                                         |
| Evening check performed by           | NA             | /                                       |

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| DATE: 7/15/01                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PAGE 30 OF SS |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Source                               | the same and a particular To-99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Cs-137        |
| Source Type                          | Alpha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Gamma         |
| Calibration Date                     | 4/3/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 9/30/2001     |
| Serial Number                        | 61457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 61457         |
| Source emission rate                 | 0.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.01          |
| Instrument Channel                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N/A           |
| High Voltage                         | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NA            |
| Battery Check                        | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 012           |
| Source Check Reading (1)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15,000        |
| Source Check Reading (2)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15,000        |
| Source Check Reading (3)             | 503                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15,000        |
| Source Check Reading (4)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15,000        |
| Source Check Reading (5)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15,000        |
| Source Check Reading (AVERAGE)       | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
| Material:                            | 400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |
| Scan Background reading (only 1)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
| Direct Background reading (1)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Direct Background reading (2)        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Direct Background reading (3)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | W             |
| Direct Background reading (4)        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Direct Background reading (5)        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Direct Background reading (AVERAGE)  | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | /             |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
| Efficiency (= (CPM-Background) / DPM | AIL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| FLAG ( = 2X Background) SCANNING     | Yw                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| FLAG ( = 2X Background) DIRECT       | and a family a second se |               |
| MID-DAY SOURCE READING               | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15,000        |
| MID-DAY BACKGROUND READING           | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | MA            |
| EVENING SOURCE READING               | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15,000        |
| EVENING BACKGROUND READING           | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NA            |
| Morning check performed by KKCS      | 0720 B°F, P. Clouly, Mod. Hun                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ding          |
| Mid-day check performed by Ame       | 1200 72°F. Summ. warm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | CUU.          |
| Evening check performed by HNL       | 1530 "                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |

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| DATE:                                                                                                          | 7/16/01                               | PAGE3 OF 58 |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------|
| Source                                                                                                         | 10 Auto - Mineral and Antonio - Fe-99 | Cs-137      |
| Source Type                                                                                                    | Alpha                                 | Gamma       |
| Calibration Date                                                                                               | 4/3/2001                              | 4/3/2001    |
| Out of Cal Date                                                                                                | 9/30/2001                             | 9/30/2001   |
| Source emission rate                                                                                           | 01457                                 | 0145/       |
| Instrument Channel                                                                                             | N/A                                   | N/A         |
| High Voltage                                                                                                   | MA                                    | NA          |
| Battery Check                                                                                                  | 014                                   | 612         |
| Source Check Reading (1)                                                                                       | 00 د                                  | 15000       |
| Source Check Reading (2)                                                                                       | 500                                   | 15000       |
| Source Check Reading (3)                                                                                       | 500                                   | 15,000      |
| Source Check Reading (4)                                                                                       | 500                                   | 15,000      |
| Source Check Reading (5)                                                                                       | 500                                   | 15,000      |
| Source Check Reading (AVERAGE)                                                                                 | 500                                   | 15,000      |
| Material:                                                                                                      | - Ul                                  |             |
| Scan Background reading (only 1)                                                                               |                                       |             |
| the second s |                                       |             |
| Direct Background reading (1)                                                                                  | 20                                    |             |
| Direct Background reading (2)                                                                                  | 20                                    |             |
| Direct Background reading (3)                                                                                  | 20                                    |             |
| Direct Background reading (4)                                                                                  | 20                                    |             |
| Direct Background reading (5)                                                                                  | 20                                    | /           |
| Direct Background reading (AVERAGE)                                                                            | 20                                    |             |
| Efficiency (= (CPM-Background) / DPM                                                                           |                                       |             |
| FLAG ( = 2X Background) SCANNING                                                                               | with                                  |             |
| FLAG ( = 2X Background) DIRECT                                                                                 |                                       |             |
|                                                                                                                | 520                                   | is and      |
|                                                                                                                |                                       | 13,000      |
| EVENING SOURCE READING                                                                                         | 500                                   | 15000       |
| EVENING BACKGROUND READING                                                                                     | 20                                    | NA          |
| Morning check performed by                                                                                     | KILS 0708 65°F P.C.                   | 1           |
| Mid-day check performed by                                                                                     | KILS 1203 7302 PS                     | 12          |
| Evening check performed by                                                                                     | JR4 1711                              |             |

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| DATE: 2/12/01                        |             | PAGE32 OF ST      |
|--------------------------------------|-------------|-------------------|
| Source                               | Te-99       | Cs-137            |
| Source Type                          | Alpha       | Gamma             |
| Calibration Date                     | 4/3/2001    | 4/3/2001          |
| Out of Cal Date                      | 9/30/2001   | 9/30/2001         |
| Serial Number                        | 61457       | 61457             |
| Source emission rate                 | 0.05        | 0.01              |
| Instrument Channel                   | N/A         | N/A               |
| High Voltage                         | NA          | NA                |
| Battery Check                        | UK          | OK                |
| Source Check Reading (1)             | 500         | 15,000            |
| Source Check Reading (2)             | 500         | 15,000            |
| Source Check Reading (3)             | 500         | 15,000            |
| Source Check Reading (4)             | 500         | 15000             |
| Source Check Reading (5)             | 500         | 1500              |
| Source Check Reading (AVERAGE)       | 500         | 15,000            |
| Material:                            | VIL         |                   |
| Scan Background reading (only 1)     |             |                   |
|                                      |             |                   |
| Direct Background reading (1)        | 30          | 500 KK            |
| Direct Background reading (2)        | 30          | SOOKK             |
| Direct Background reading (3)        | 30          | - STOFK           |
| Direct Background reading (4)        | 30          | <del>500</del> EK |
| Direct Background reading (5)        | 30          | 500 Fil           |
| Direct Background reading (AVERAGE)  | 30          | SOCILK            |
| Efficiency (= (CPM-Background) / DPM |             |                   |
| FLAG ( = 2X Background) SCANNING     | FUE         |                   |
| FLAG ( = 2X Background) DIRECT       |             |                   |
| MID-DAY SOURCE READING               | 500         | 15000             |
| MID-DAY BACKGROUND READING           | 20          | NA                |
| EVENING SOURCE READING               | 500         | 15,000            |
| EVENING BACKGROUND READING           | 20          | NA                |
| Morning check performed by KKS 0120  | 68°F, Rain  |                   |
| Mid-day check performed by AWV 12    | x 687 Cloby | Ville             |
| Evening check performed by Kk 3718   | 73° Hund    |                   |

| DATE: 21,9/01                        |                                | PAGE3 OF 58 |
|--------------------------------------|--------------------------------|-------------|
| Source                               | and any the american are TC-99 | Cs-137      |
| Source Type                          | Alpha                          | Gamma       |
| Calibration Date                     | 4/3/2001                       | 4/3/2001    |
| Out of Cal Date                      | 9/30/2001                      | 9/30/2001   |
| Serial Number                        | 61457                          | 61457       |
| Source emission rate                 | 0.05                           | 0.01        |
|                                      | N/A                            | N/A         |
| High Voltage                         | NA                             | NA          |
| Battery Check                        | OL                             | OK          |
| Source Check Reading (1)             | 400                            | 15000       |
| Source Check Reading (2)             | 500                            | 14000       |
| Source Check Reading (3)             | 500                            | 14000       |
| Source Check Reading (4)             | 500                            | 15000       |
| Source Check Reading (5)             | 400                            | 15000       |
| Source Check Reading (AVERAGE)       | 460                            | 14600       |
| Material:                            | ( UC                           |             |
| Scan Background reading (only 1)     |                                |             |
|                                      |                                |             |
| Direct Background reading (1)        | 20                             |             |
| Direct Background reading (2)        | 20                             |             |
| Direct Background reading (3)        | 20                             | W           |
| Direct Background reading (4)        | 20                             | ¥           |
| Direct Background reading (5)        | QD                             |             |
| Direct Background reading (AVERAGE)  | 20                             | /           |
| Efficiency (= (CPM-Background) / DPM |                                |             |
| FLAG ( = 2X Background) SCANNING     | Ult                            |             |
| FLAG ( = 2X Background) DIRECT       |                                |             |
| MID-DAY SOURCE READING               | not used in AM                 | NA          |
| MID-DAY BACKGROUND READING           | NA                             | NA          |
| EVENING SOURCE READING               | not used in PM                 | NA          |
| EVENING BACKGROUND READING           | NA                             | NA          |
| Morning check performed by           | 10 togay 104 F                 |             |
| Mid-day check performed by           | NA WO                          | W           |
| Evening check performed by           | NA                             |             |

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#### Pancake G-M Serial Number 61403/51751 - Kuk

| DATE: 7/23/01                        |                          | PAGED 4 OF 58 |
|--------------------------------------|--------------------------|---------------|
| Source                               | TC-99                    | Cs-137        |
| Source Type                          | Alpha                    | Gamma         |
| Calibration Date                     | 1/30/2001                | 1/30/2001     |
| Out of Cal Date                      | 7/29/2001                | 7/29/2001     |
| Serial Number                        | 61390                    | 61390         |
| Source emission rate                 | 5.00%                    | 1.00%         |
| Instrument Channel                   | N/A                      | N/A           |
| High Voltage                         | NA                       | NA            |
| Battery Check                        | οκ                       | 12 OK         |
| Source Check Reading (1)             | 500                      | 14,000        |
| Source Check Reading (2)             | 500                      | 17,000        |
| Source Check Reading (3)             | 500                      | 14,000        |
| Source Check Reading (4)             | 500                      | 14,000        |
| Source Check Reading (5)             | 500                      | 14,000        |
| Source Check Reading (AVERAGE)       | 500                      | 14,000        |
| Material:                            |                          |               |
| Scan Background reading (only 1)     |                          |               |
|                                      |                          |               |
| Direct Background reading (1)        | 30                       |               |
| Direct Background reading (2)        | 20                       |               |
| Direct Background reading (3)        | 20                       | W             |
| Direct Background reading (4)        | 30                       | y y           |
| Direct Background reading (5)        | 20                       |               |
| Direct Background reading (AVERAGE)  | 24                       |               |
| Efficiency (= (CPM-Background) / DPM |                          |               |
| FLAG ( = 2X Background) SCANNING     | Will                     |               |
| FLAG ( = 2X Background) DIRECT       |                          |               |
| MID-DAY SOURCE READING               | Som                      | 15.000        |
|                                      | 20                       | NA            |
|                                      | 500)                     | (Y A(X))      |
| EVENING BACKGROUND READING           | 20                       | NA            |
| Morning check performed by KL        | 74°F. Sum, Hunid         |               |
| Mid-day check performed by           | 74°F, P. Sunny, Hazy     | plic          |
| Evening check performed by           | 78°F Mosty Cloudy, Herry |               |

#### 61457

# Pancake G-M Serial Number 61403/51751

| DATE: 7/24/01                        |                                       | PAGES OF 58 |
|--------------------------------------|---------------------------------------|-------------|
| Source                               | 1 + sayati mer a ca sa mar a 1 C+ 90. | Cs-137      |
| Source Type                          | Alpha                                 | Gamma.      |
| Calibration Date                     | 1/30/2001                             | 1/30/2001   |
| Out of Cal Date                      | 7/29/2001                             | 7/29/2001   |
| Serial Number                        | 61390                                 | 61390       |
| Source emission rate                 | 5.00%                                 | 1.00%       |
| Instrument Channel                   | N/A                                   | N/A         |
| High Voltage                         | NA                                    | NA          |
| Battery Check                        | OK                                    | dr          |
| Source Check Reading (1)             | 500                                   | 14,000      |
| Source Check Reading (2)             | 500                                   | 15,000      |
| Source Check Reading (3)             | 500                                   | 15,000      |
| Source Check Reading (4)             | 500                                   | 15,000      |
| Source Check Reading (5)             | 500                                   | 15,000      |
| Source Check Reading (AVERAGE)       | 500                                   | 14,800      |
| Motorial:                            |                                       |             |
|                                      | NX                                    |             |
| Scan Background reading (Unity T)    |                                       |             |
| Direct Background reading (1)        | 20                                    | /           |
| Direct Background reading (2)        | 20                                    |             |
| Direct Background reading (3)        | 30                                    | M           |
| Direct Background reading (4)        | 20                                    | ¥           |
| Direct Background reading (5)        | 20                                    |             |
| Direct Background reading (AVERAGE)  | 22                                    |             |
| Efficiency (= (CPM-Background) / DPM | 9-10-K15                              |             |
| ELAG (= 2X Background) SCANNING      | W                                     |             |
| FLAG (= 2X Background) DIRECT        | ×                                     |             |
|                                      |                                       |             |
| MID-DAY SOURCE READING               | 500                                   | 15,000      |
| MID-DAY BACKGROUND READING           | 20                                    | MA          |
| EVENING SOURCE READING               | 500                                   | 15,000      |
| EVENING BACKGROUND READING           | 20                                    | NA          |
| Morning check performed by KKS       | 0730 76200 F, Humid, Suny             |             |
| Mid-day check performed by Kic 5     | 1159 76°F, Clarky Hunid               | July -      |
| Evening check performed by           | 1740 78°F, Clordy, Humd               |             |

#### 61457

#### Pancake G-M Serial Number 61403/51751

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| DATE: 7/25/01                        |                                    | PAGE 30 OF SK |
|--------------------------------------|------------------------------------|---------------|
| Source                               | anget many state marine ins TC=99. | Cs-137        |
| SourceType                           | Alpha                              | Gamma         |
| Calibration Date                     | 1/30/2001                          | 1/30/2001     |
| Out of Cal Date                      | 7/29/2001                          | 7/29/2001     |
| Serial Number                        | 61390                              | 61390         |
| Source emission rate                 | 5.00%                              | 1.00%         |
| Instrument Channel                   | N/A                                | N/A           |
| High Voltage                         | NA                                 | NA            |
| Battery Check                        | OK                                 | olc           |
| Source Check Reading (1)             | 500                                | 15,000        |
| Source Check Reading (2)             | 500                                | 15,000        |
| Source Check Reading (3)             | 500                                | 15,000        |
| Source Check Reading (4)             | 500                                | 15,000        |
| Source Check Reading (5)             | 500                                | 14,000        |
| Source Check Reading (AVERAGE)       | 500                                | :4,800        |
| Material:                            | volle                              |               |
| Scan Background reading (only 1)     |                                    |               |
|                                      |                                    |               |
| Direct Background reading (1)        | 30                                 |               |
| Direct Background reading (2)        | 30                                 |               |
| Direct Background reading (3)        | 30                                 |               |
| Direct Background reading (4)        | 30                                 | y w           |
| Direct Background reading (5)        | 30                                 |               |
| Direct Background reading (AVERAGE)  | 30                                 |               |
| Efficiency (= (CPM-Background) / DPM |                                    |               |
| FLAG ( = 2X Background) SCANNING     | We                                 |               |
| FLAG ( = 2X Background) DIRECT       |                                    |               |
| MID-DAY SOURCE READING               | 500                                | 15.000        |
| MID-DAY BACKGROUND READING           | 10                                 | NA            |
| EVENING SOURCE READING               | 500                                | 15.000        |
| EVENING BACKGROUND READING           | 20                                 | NA            |
| Morning check performed by KKS       | 0710 5007, 76°F, humid             |               |
| Mid-day check performed by 14%       | 1148 sumy 76°F Hund                | 100           |
| Evening check performed by Vom       | 5:350 Duercast 78° = Himi          | 0             |
#### SENECA ARMY DEPOT SEAD-12 RI/FS

# 61457

#### Pancake G-M Serial Number 61403/51751

| DATE: 7/26/01                       |                                    | PAGE 37 OF 58         |
|-------------------------------------|------------------------------------|-----------------------|
| Source                              | T - Trees of the Constant of C-98m | Cs-137                |
| Source Type                         | Alpha                              | Gamma                 |
| Calibration Date                    | 1/30/2001                          | 1/30/2001             |
| Out of Cal Date                     | 7/29/2001                          | 7/29/2001             |
| Serial Number                       | 61390<br>5.00%                     | 61390                 |
| Instrument Channel                  | 5.00%<br>N/A                       | Ν/Δ                   |
| High Voltage                        | AKKS                               | NA                    |
| Battery Check                       | 01                                 | OK                    |
| Source Check Reading (1)            | KOD KOD                            | 15 Ann                |
| Source Check Reading (2)            | 300                                | 15.000                |
|                                     | 500                                | 13,000                |
| Source Check Reading (3)            | 500                                | 15 000                |
| Source Check Reading (4)            | )00                                | 15,000                |
| Source Check Reading (5)            | 500                                | 15,000                |
| Source Check Reading (AVERAGE)      | 500                                | 17,000                |
| Material:                           |                                    |                       |
| Scan Background reading (only 1)    | - Off                              |                       |
|                                     |                                    | and the second second |
| Direct Background reading (1)       | 30                                 |                       |
| Direct Background reading (2)       | 20                                 |                       |
| Direct Background reading (3)       | 20                                 | - WY                  |
| Direct Background reading (4)       | 30                                 | y y                   |
| Direct Background reading (5)       | 20                                 |                       |
| Direct Background reading (AVERAGE) | 24                                 |                       |
|                                     |                                    |                       |
|                                     | Vill                               |                       |
| FLAG ( = 2X Background) SCANNING    | L.                                 |                       |
| FLAG ( = 2X Background) DIRECT      |                                    |                       |
| MID-DAY SOURCE READING              | 55 500                             | 15,000                |
| MID-DAY BACKGROUND READING          | 30                                 | NA                    |
| EVENING SOURCE READING              | 500                                | 15,000                |
| EVENING BACKGROUND READING          | 20                                 | NA                    |
| Morning check performed by KKs      | 0715 Showers, 740                  |                       |
| Mid-day check performed by KK S     | 1204 Sunny , 73°                   | Vr                    |
| Evening check performed by Rom      | 5:20, Sinny 740                    |                       |

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| DATE: 7(27/01                        |                         | PAGE38 OF 58 |
|--------------------------------------|-------------------------|--------------|
| Source                               | Tc-99                   | Cs-137       |
| Source Type                          | Alpha                   | Gamma        |
| Calibration Date                     | 1/30/2001               | 1/30/2001    |
| Out of Cal Date                      | 7/29/2001               | 7/29/2001    |
| Serial Number                        | 61390                   | 61390        |
| Source emission rate                 | 5.00%                   | 1.00%        |
| Instrument Channel                   | N/A                     | N/A          |
| High Voltage                         | NA                      |              |
| Battery Check                        | ok                      |              |
| Source Check Reading (1)             | 600                     | 16000        |
| Source Check Reading (2)             | 500                     | 16000        |
| Source Check Reading (3)             | 500                     | 15006        |
| Source Check Reading (4)             | 500                     | 15000        |
| Source Check Reading (5)             | 500                     | (6000        |
| Source Check Reading (AVERAGE)       | 520                     | 15600        |
| Material:                            | Var                     |              |
| Scan Background reading (only 1)     | Y Y                     |              |
|                                      | No. of Concession, Name |              |
| Direct Background reading (1)        | 20                      |              |
| Direct Background reading (2)        | 20                      |              |
| Direct Background reading (3)        | 20                      | W            |
| Direct Background reading (4)        | 20                      | Jun -        |
| Direct Background reading (5)        | 20                      | /            |
| Direct Background reading (AVERAGE)  | 20                      |              |
| Efficiency (= (CPM-Background) / DPM |                         |              |
| FLAG ( = 2X Background) SCANNING     | Wib                     |              |
| FLAG ( = 2X Background) DIRECT       |                         |              |
|                                      |                         |              |
| MID-DAY SOURCE READING               | 500                     | 15000        |
| MID-DAY BACKGROUND READING           | 20                      | MA           |
| EVENING SOURCE READING               | 500                     | 16000        |
| EVENING BACKGROUND READING           | 20                      | NA           |
| Morning check performed by           | Rom 68° sunny           | 7=10a.       |
| Mid-day check performed by           | Rom 70° sunny           | 12:450       |
| Evening check performed by           | Rom 74° Sunny           | 5:250        |

| DATE: 7/28/01                        |                          | PAGE OF 58 |
|--------------------------------------|--------------------------|------------|
| Source                               | Tc-99                    | Cs-137     |
| Source Type                          | Alpha                    | Gamma      |
| Calibration Date                     | 1/30/2001                | 1/30/2001  |
| Out of Cal Date                      | 7/29/2001                | 7/29/2001  |
| Serial Number                        | 61390                    | 61390      |
| Source emission rate                 | 5.00%                    | 1.00%      |
| Instrument Channel                   | N/A                      | N/A        |
| High Voltage                         | NA                       | NA         |
| Battery Check                        | ok                       | oll        |
| Source Check Reading (1)             | 500                      | 15,000     |
| Source Check Reading (2)             | 500                      | 15,000     |
| Source Check Reading (3)             | 500                      | 15,000     |
| Source Check Reading (4)             | 500                      | 15,000     |
| Source Check Reading (5)             | 500                      | 15,200     |
| Source Check Reading (AVERAGE)       | 500                      | 5,000      |
| Material:                            | VINV                     |            |
| Scan Background reading (only 1)     | 000                      |            |
|                                      |                          |            |
| Direct Background reading (1)        | 20                       |            |
| Direct Background reading (2)        | 20                       |            |
| Direct Background reading (3)        | 20                       | - W        |
| Direct Background reading (4)        | 20                       | <u></u>    |
| Direct Background reading (5)        | 20                       | /          |
| Direct Background reading (AVERAGE)  | 20                       | /          |
| Efficiency (= (CPM-Background) / DPM |                          |            |
| FLAG ( = 2X Background) SCANNING     | uh                       |            |
| FLAG ( = 2X Background) DIRECT       |                          |            |
|                                      |                          |            |
| MID-DAY SOURCE READING               | 500                      | 15,000     |
| MID-DAY BACKGROUND READING           | 20                       | NA         |
| EVENING SOURCE READING               | 500                      | 15,000     |
| EVENING BACKGROUND READING           | 20                       | NA         |
| Morning check performed by           | Rom 67 Sunny 7:30a       | .1.        |
| Mid-day check performed by           | KULS 1218 sunny, dry 70° | Va         |
| Evening check performed by           | Rom Gunny 1600 74°       | /          |

|         |     |        | 61457          |       |
|---------|-----|--------|----------------|-------|
| Pancake | G-M | Serial | Number-61403/5 | 51751 |

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| DATE: 7/29/01                        |                              | PAGE 40 OF 58 |
|--------------------------------------|------------------------------|---------------|
| Source - Annual Source - Source -    | TC-99                        | Cs-137        |
| Source Type                          | Alpha                        | Gamma         |
| Calibration Date                     | 1/30/2001                    | 1/30/2001     |
| Out of Cal Date                      | (/29/2001                    | 7/29/2001     |
| Source emission rate                 | 5.00%                        | 1 00%         |
| Instrument Channel                   | N/A                          | N/A           |
| High Voltage                         | NA                           | NA            |
| Battery Check                        | OK                           | OK            |
| Source Check Reading (1)             | 500                          | 15,000        |
| Source Check Reading (2)             | 500                          | 15,000        |
| Source Check Reading (3)             | 603                          | 15,000        |
| Source Check Reading (4)             | 500                          | 15,000        |
| Source Check Reading (5)             | 607                          | 15,000        |
| Source Check Reading (AVERAGE)       | 500                          | 15,000        |
| Material:                            | INV                          |               |
| Scan Background reading (only 1)     |                              |               |
|                                      |                              |               |
| Direct Background reading (1)        | 20                           |               |
| Direct Background reading (2)        | 20                           |               |
| Direct Background reading (3)        | 20                           | 10            |
| Direct Background reading (4)        | 20                           | UN            |
| Direct Background reading (5)        | 20                           |               |
| Direct Background reading (AVERAGE)  | 20                           |               |
| Efficiency (= (CPM-Background) / DPM |                              |               |
| FLAG ( = 2X Background) SCANNING     | Ul                           |               |
| FLAG ( = 2X Background) DIRECT       |                              |               |
| MID-DAY SOURCE READING               | 500                          | 16,000        |
| MID-DAY BACKGROUND READING           | 30                           | MA            |
| EVENING SOURCE READING               | 500                          | 15000         |
| EVENING BACKGROUND READING           | 20                           | NA            |
| Morning check performed by           | KKS ,0727 70° Sumy, dry      | . /           |
| Mid-day check performed by           | Kus 1217, 72°, P. Claudy, de | y Kill        |
| Evening check performed by           | JMK, 540 74° PC dm           |               |

| DATE: 7/30/01                        |                   | PAGE4 OF 58 |
|--------------------------------------|-------------------|-------------|
| Source                               | 10-99             | Cs 137      |
| Source Type                          | Alpha             | Gamma       |
| Calibration Date                     | 4/3/2001          | 4/3/2001    |
| Serial Number                        | 9/30/2001         | 9/30/2001   |
| Source emission rate                 | 0.05              | 0145/       |
| Instrument Channel                   | 0.05<br>N/A       | N/A         |
| High Voltage                         | NA                | NA          |
| Battery Check                        | JK                | dr          |
| Source Check Reading (1)             | 500               | 15,000      |
| Source Check Reading (2)             | 500               | 16,000      |
| Source Check Reading (3)             | 500               | 15,000      |
| Source Check Reading (4)             | 560               | 15,000      |
| Source Check Reading (5)             | 500               | 15,000      |
| Source Check Reading (AVERAGE)       | 500               | 15,200      |
|                                      |                   |             |
| Material:                            | VILL              |             |
| Scan Background reading (only 1)     |                   |             |
|                                      |                   |             |
| Direct Background reading (1)        | 20                |             |
| Direct Background reading (2)        | 20                |             |
| Direct Background reading (3)        | 10                | the         |
| Direct Background reading (4)        | 20                | Like        |
| Direct Background reading (5)        | 30                | /           |
| Direct Background reading (AVERAGE)  | 22                | /           |
| Efficiency (= (CPM-Background) / DPM |                   |             |
| FLAG ( = 2X Background) SCANNING     | (N)L              |             |
| FLAG ( = 2X Background) DIRECT       |                   | · · · ·     |
|                                      |                   |             |
| MID-DAY SOURCE READING               | 500               | 15,000      |
| MID-DAY BACKGROUND READING           | 20                | NA          |
| EVENING SOURCE READING               | 500               | 14,000      |
| EVENING BACKGROUND READING           | 20                | NK          |
| Morning check performed by           | for 7:15a Sorra   | °70°        |
| Mid-day check performed by           | Rm 12:00 pourcast | 702         |
| Evening check performed by           | Rom 5:05, overas  | 76°         |

| DATE: 7/31/01                        |                      | PAGE42-OF 58 |
|--------------------------------------|----------------------|--------------|
| Source                               | TC-99                | Cs-137       |
| Source Type                          | Alpha                | Gamma        |
| Calibration Date                     | 4/3/2001             | 4/3/2001     |
| Out of Cal Date                      | 9/30/2001            | 9/30/2001    |
| Serial Number                        | 0.05                 | 61457        |
| Instrument Channel                   | 0.05<br>N/A          | 0.01<br>N/A  |
| High Voltage                         | NA                   | INX          |
| Battery Check                        | ok                   | OW           |
| Source Check Reading (1)             | 500                  | 15,000       |
| Source Check Reading (2)             | 500                  | 15,000       |
| Source Check Reading (3)             | 400                  | 14,000       |
| Source Check Reading (4)             | 400                  | 14,000       |
| Source Check Reading (5)             | 500                  | 14,000       |
| Source Check Reading (AVERAGE)       | 460                  | 14,400       |
| Material:                            |                      |              |
| Scan Background reading (only 1)     | 100                  |              |
|                                      |                      |              |
| Direct Background reading (1)        | 30                   |              |
| Direct Background reading (2)        | 20                   |              |
| Direct Background reading (3)        | 10                   | ~ /          |
| Direct Background reading (4)        | 20                   | in           |
| Direct Background reading (5)        | 10                   |              |
| Direct Background reading (AVERAGE)  | 18                   | /            |
| Efficiency (= (CPM-Background) / DPM |                      |              |
| FLAG ( = 2X Background) SCANNING     | You                  |              |
| FLAG ( = 2X Background) DIRECT       |                      |              |
|                                      |                      |              |
| MID-DAY SOURCE READING               | 500                  | 15,000       |
| MID-DAY BACKGROUND READING           | 20                   | NA           |
| EVENING SOURCE READING               | 500                  | 15,000       |
| EVENING BACKGROUND READING           | 40                   | NN           |
| Morning check performed by           | esm 72° svany humich |              |
| Mid-day check performed by           | Rom 74° Sunny        | the          |
| Evening check performed by           | Kell 76 Summy        | /            |

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| DATE: 8/1/01                         |                  | PAGE 43 OF 58 |
|--------------------------------------|------------------|---------------|
| Source                               | T.C.99           | Cs-137        |
| Source Type                          | Alpha            | Gamma         |
| Calibration Date                     | 4/3/2001         | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001        | 9/30/2001     |
| Serial Number                        | 61457            | 61457         |
| Source emission rate                 | 0.05             | 0.01          |
| Instrument Channel                   | N/A              | N/A           |
| High Voltage                         | NA               | NA            |
| Battery Check                        | DIL              | OK            |
| Source Check Reading (1)             | 400              | 14,000        |
| Source Check Reading (2)             | 500              | 14,000        |
| Source Check Reading (3)             | 500              | 14,000        |
| Source Check Reading (4)             | 400              | 14,000        |
| Source Check Reading (5)             | 500              | 14,000        |
| Source Check Reading (AVERAGE)       | 469              | 14,000        |
| Material:                            | Mar              |               |
| Scan Background reading (only 1)     |                  |               |
|                                      |                  |               |
| Direct Background reading (1)        | 20               |               |
| Direct Background reading (2)        | 20               |               |
| Direct Background reading (3)        | 10               | WY/           |
| Direct Background reading (4)        | 30               | V/            |
| Direct Background reading (5)        | 10               |               |
| Direct Background reading (AVERAGE)  | 18               | /             |
| Efficiency (= (CDM Background) / DDM |                  |               |
|                                      | VUL              |               |
| FLAG (= 2X Background) SCANNING      |                  |               |
| FLAG (= 2X Background) DIRECT        |                  |               |
| MID-DAY SOURCE READING               | 500              | 15,000        |
| MID-DAY BACKGROUND READING           | 20               | NA            |
| EVENING SOURCE READING               | 400              | 14,000        |
| EVENING BACKGROUND READING           | i0               | NA            |
| Morning check performed by           | RAM TUSAN Sunny  | 72° humid     |
| Mid-day check performed by           | Rom 12:50 Sunny  | 78° humid     |
| Evening check performed by           | pan 4:35 p Sunny | 83° hund      |

| DATE: 8/8/01                         |               | PAGE44 OF 58 |
|--------------------------------------|---------------|--------------|
| Source                               | Tc-99         | Cs-137       |
| Source Type                          | Alpha         | Gamma        |
| Calibration Date                     | 4/3/2001      | 4/3/2001     |
| Out of Cal Date                      | 9/30/2001     | 9/30/2001    |
| Serial Number                        | 61457         | 61457        |
| Source emission rate                 | 0.05          | 0.01         |
|                                      | N/A           | N/A          |
| High Voltage                         | NA            | NA           |
| Battery Check                        | ok            | OK           |
| Source Check Reading (1)             | 500           | 14000        |
| Source Check Reading (2)             | 400           | 14000        |
| Source Check Reading (3)             | 500           | 14000        |
| Source Check Reading (4)             | 500           | 15000        |
| Source Check Reading (5)             | 506           | 15000        |
| Source Check Reading (AVERAGE)       |               | 14400        |
| Material                             |               |              |
|                                      | 1             | LH           |
| ocan backgroung reading (only 1)     |               |              |
| Direct Background reading (1)        | 20            | /            |
| Direct Background reading (2)        | 10            |              |
| Direct Background reading (3)        | 20            | W            |
| Direct Background reading (4)        | 10            | Y            |
| Direct Background reading (5)        | 20            |              |
| Direct Background reading (AVERAGE)  | 16            |              |
| Efficiency (= (CPM-Background) / DPM |               |              |
| FLAG ( = 2X Background) SCANNING     | VILL          | M            |
| FLAG ( = 2X Background) DIRECT       |               |              |
|                                      |               |              |
| MID-DAY SOURCE READING               | 500           | 15,000       |
| MID-DAY BACKGROUND READING           | 20            | NA           |
| EVENING SOURCE READING               | 500           | 15,000       |
| EVENING BACKGROUND READING           | 20            | NA           |
| Morning check performed by           | pm 78° humid  | Sunny        |
| Mid-day check performed by           | for 75° horid | 5-111        |
| Evening check performed by           | nom 840 Sund  | 5-114        |

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| DATE: 6/9/01                         |                   | PAGE 45 OF 58 |
|--------------------------------------|-------------------|---------------|
| Source                               | TC-99             | Cs-137        |
| Source Type                          | Alpha             | Gamma         |
| Calibration Date                     | 4/3/2001          | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001         | 9/30/2001     |
| Serial Number                        | 0.05              | 61457         |
| Source emission rate                 | 0.05              | 0.01          |
|                                      |                   |               |
| High Voltage                         | NA                | NX            |
| Battery Check                        | JOK               | OK-           |
| Source Check Reading (1)             | 500               | 14000         |
| Source Check Reading (2)             | 500               | 14000         |
| Source Check Reading (3)             | 500               | 14000         |
| Source Check Reading (4)             | 500               | 14060         |
| Source Check Reading (5)             | 566               | 14000         |
| Source Check Reading (AVERAGE)       | 500               | 14000         |
| Material:                            | - WL              |               |
| Scan Background reading (only 1)     | L. Le             |               |
|                                      |                   |               |
| Direct Background reading (1)        | 20                |               |
| Direct Background reading (2)        | 10                |               |
| Direct Background reading (3)        | 30                | W             |
| Direct Background reading (4)        | 20                | y y           |
| Direct Background reading (5)        | 20                |               |
| Direct Background reading (AVERAGE)  | 20                |               |
| Efficiency (= (CPM-Background) / DPM |                   |               |
| FLAG ( = 2X Background) SCANNING     | ill               |               |
| FLAG ( = 2X Background) DIRECT       |                   |               |
|                                      | 500               | 15.000        |
|                                      | 30                | AIA           |
| MID-DAY BACKGROUND READING           | 10                | 15000         |
| EVENING SOURCE READING               | 500               | 13000         |
| EVENING BACKGROUND READING           | 10                | AN .          |
| Morning check performed by           | Rom 7:45a Sunny   | humit 78°     |
| Mid-day check performed by           | Pom 11:45 p Sonny | himid 80°     |
| Evening check performed by           | 121 1810          | May rain      |

| Source Type       Applia       Cs 137, 0         Gailbration Date       Applia       Gamma         Gailbration Date       4/3/2001       4/3/2001         Out of Cal Date       9/30/2001       9/30/2001         Source Type       0.05       0.01         Instrument Channel       N/A       N/A         N/A       N/A       N/A         Battery Check       0k       0/L         Source Check Reading (1) $5000$ $15, 000$ Source Check Reading (2) $5000$ $15, 000$ Source Check Reading (3) $5000$ $14, 000$ Source Check Reading (4) $5000$ $14, 000$ Source Check Reading (5) $5000$ $14, 000$ Source Check Reading (6) $5000$ $14, 000$ Material: $3000$ $14, 000$ Source Check Reading (0) $5000$ $14, 000$ Material: $3000$ $14, 000$ Source Check Reading (0) $5000$ $14, 000$ Material: $3000$ $1000$ Direct Background reading (1) $2000$ $1000$ Direct Background read                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DATE: 8/10/01                        |                   | PAGE 6 OF 58    |
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| Source TypeApplaGammaCalibration Date4/3/20014/3/2001Out of Calibration Date9/30/20019/30/2001Serial Number6/4576/1457Source emission rate0.050.01Instrument ChannelN/AN/AHigh VoltageN/AN/ABattery Check $O_k$ $O(k)$ Source Check Reading (1) $5 \circ O$ $15_1 \circ \circ \circ$ Source Check Reading (2) $5 \circ O$ $15_1 \circ \circ \circ$ Source Check Reading (3) $5 \circ O$ $14_1 \circ \circ \circ$ Source Check Reading (5) $5 \circ O$ $14_1 \circ \circ \circ$ Source Check Reading (6) $5 \circ O$ $14_1 \circ \circ \circ$ Source Check Reading (6) $5 \circ O$ $14_1 \circ \circ \circ$ Source Check Reading (6) $5 \circ O$ $14_1 \circ \circ \circ$ Source Check Reading (6) $5 \circ O$ $14_1 \circ \circ \circ$ Source Check Reading (7) $2 \circ$ $1 0 \circ 1 \circ 1 \circ 1$ Source Check Reading (6) $5 \circ 1 \circ 1$ $1 0 \circ 1 \circ 1 \circ 1$ Source Check Reading (7) $2 \circ 1 \circ 1 \circ 1$ $1 0 \circ 1 \circ 1 \circ 1 \circ 1$ Direct Background reading (1) $2 \circ 1 \circ 1 \circ 1 \circ 1 \circ 1$ $3 \circ 1 \circ $                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Source                               | Tc-99             | Cs-137          |
| Calibration Date 4/3/2001 4/3/2001<br>Quit of Cal Date 9/30/2001 9/30/2001<br>Serial Number 61457 61457<br>Source emission rate 0.05 0.01<br>Instrument Channel N/A N/A N/A<br>High Voltage N/A N/A N/A<br>Battery Check Caeding (1) $$00$ (15,000<br>Source Check Reading (2) $$00$ (15,000<br>Source Check Reading (3) $$00$ (15,000<br>Source Check Reading (3) $$00$ (15,000<br>Source Check Reading (3) $$00$ (14,000<br>Source Check Reading (4) $$00$ (14,000<br>Source Check Reading (5) $$00$ (14,000<br>Source Check Reading (7) $$00$ (14,000<br>Material: Scan Background reading (7) (20)<br>Direct Background reading (1) (20)<br>Direct Background reading (3) $$00$ (14,000<br>Material: Scan Background reading (5) (20)<br>Direct Background reading (6) $$20$ (10)<br>Direct Background reading (5) $$20$ (10)<br>Direct Background reading (6) $$20$ (10)<br>Direct Background reading (7) (20)<br>Direct Background reading (5) $$20$ (10)<br>Direct Background reading (7) (20)<br>Direct Background reading (7) $$20$ (10)<br>Direct Background DIRECT $$100$ (10)<br>Efficiency (= (CPM-Background) / DPM<br>FLAG (= 2X Background) DIRECT $$100$ (10)<br>EVENING SOURCE READING $$20$ (15,000)<br>Machday check performed by $$200$ (00) (5,000)<br>Machday check performed by $$200$ (00) (5,000)<br>Data Suboc (00) (5,000)<br>D                                                                                                                                                       | Source Type                          | Alpha             | Gamma           |
| Out of Cal Date         9/30/2001         9/30/2001         9/30/2001           Serial Number         6/1457         6/1457         6/1457           Source emission rate         0.05         0.01         Instrument Channel         N/A         N/A           High Voltage         N/A         N/A         N/A         N/A           Battery Check         0/L         0/L         Source Check Reading (1)         \$\$\scillabla or O         15,000         \$\$           Source Check Reading (2)         \$\$         0 O         15,000         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$\$         \$         \$\$         \$ <t< td=""><td>Calibration Date</td><td>4/3/2001</td><td>4/3/2001</td></t<>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Calibration Date                     | 4/3/2001          | 4/3/2001        |
| Serial Number       61457       61457         Source emission rate       0.05       0.01         Instrument Channel       N/A       N/A         High Voltage       N/A       N/A         Battery Check $Ok$ $0k$ Source emission rate $0.05$ $0.01$ Source Check Reading (1) $\mathbf{\zeta} \circ \mathbf{O}$ $(S_1 \circ \mathbf{o} \circ)$ Source Check Reading (2) $\mathbf{\zeta} \circ \mathbf{O}$ $(S_1 \circ \mathbf{o} \circ)$ Source Check Reading (3) $\mathbf{\zeta} \circ \mathbf{O}$ $(U_1 \circ \mathbf{o} \circ)$ Source Check Reading (4) $\mathbf{\zeta} \circ \mathbf{O}$ $(U_1 \circ \mathbf{o} \circ)$ Source Check Reading (5) $\mathbf{\zeta} \circ \mathbf{O}$ $(U_1 \circ \mathbf{o} \circ)$ Source Check Reading (AVERAGE) $\mathbf{\zeta} \circ \mathbf{O}$ $(U_1 + \mathbf{o} \circ)$ Material: $\mathbf{U}$ $\mathbf{U}$ $\mathbf{U}$ Stan Background reading (1) $\mathbf{Z} \mathbf{O}$ $\mathbf{U}$ $\mathbf{U}$ Direct Background reading (3) $\mathbf{Z} \mathbf{O}$ $\mathbf{U}$ $\mathbf{U}$ Direct Background reading (4) $\mathbf{X} \circ$ $\mathbf{U}$ $\mathbf{U}$ Direct Background reading (A) $\mathbf{Z} \mathbf{O}$ $\mathbf{U}$ $\mathbf{U}$ Direct Background reading (A) $\mathbf{Z} \mathbf{O}$ $\mathbf{U}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Out of Cal Date                      | 9/30/2001         | 9/30/2001       |
| Source ermssion rate       0.05       0.01         Instrument Channel       N/A       N/A         High Voltage       N/A       N/A         Battery Check $Ok$ $Ok$ Source Check Reading (1) $500$ $(5, 000)$ Source Check Reading (2) $500$ $(5, 000)$ Source Check Reading (3) $500$ $(4, 000)$ Source Check Reading (4) $500$ $(4, 000)$ Source Check Reading (5) $5000$ $(4, 000)$ Source Check Reading (AVERAGE) $5000$ $(4, 400)$ Material:       Scan Background reading (only 1) $200$ Direct Background reading (2) $(100)$ $200$ Direct Background reading (3) $300$ $100$ Direct Background reading (5) $200$ $100$ Direct Background Packing (4) $300$ $100$ Direct Background Packing (4) $300$ </td <td></td> <td>61457</td> <td>61457</td>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                      | 61457             | 61457           |
| Instantion Contents       N/A       N/A         High Voltage       N/A       NA         Battery Check $Ok$ $O(k$ Source Check Reading (1) $\leq \circ O$ $l \leq \rho \circ o$ Source Check Reading (2) $\leq \circ O$ $l \leq \rho \circ o$ Source Check Reading (3) $\leq \circ O$ $l \leq \rho \circ o$ Source Check Reading (3) $\leq \circ O$ $l \leq \rho \circ o$ Source Check Reading (5) $\int O O$ $l \leq \rho \circ o$ Source Check Reading (AVERAGE) $\int O O$ $l \leq \rho \circ o$ Material: $WW$ $WW$ $O$ Scan Background reading (nly 1) $QO$ $QO$ $QO$ Direct Background reading (2) $I O$ $U$ $O$ Direct Background reading (3) $QO$ $WW$ $O$ Direct Background reading (5) $Z O$ $WW$ $O$ Direct Background reading (6) $Z O$ $WW$ $O$ Direct Background reading (AVERAGE) $Z Z$ $WW$ $O$ Efficiency (= (CPM-Background) / DPM $WW$ $WW$ $WW$ $WW$ FLAG (= 2X Background) DIRECT $WA$ $WA$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Source emission rate                 | 0.05              | 0.01            |
| High Voltage $n^{1} n^{1}$ NA         Battery Check       Ok       0k         Source Check Reading (1) $5 \circ 0$ $15 \circ 0 \circ$ Source Check Reading (2) $5 \circ 0$ $15 \circ 0 \circ$ Source Check Reading (3) $5 \circ 0$ $14 \circ 0 \circ$ Source Check Reading (3) $5 \circ 0$ $14 \circ 0 \circ$ Source Check Reading (4) $5 \circ 0$ $14 \circ 0 \circ$ Source Check Reading (5) $5 \circ 0$ $14 \circ 0 \circ$ Source Check Reading (AVERAGE) $5 \circ 0$ $14 \circ 0 \circ$ Material: $5 \circ 0$ $14 \circ 0 \circ$ Direct Background reading (only 1) $2 \circ$ $10 \circ$ Direct Background reading (3) $3 \circ$ $3 \circ$ Direct Background reading (AVERAGE) $2 \circ$ $2 \circ$ Direct Background reading (AVERAGE) $2 \circ$ $15 \circ 0 \circ$ Direct Background reading (AVERAGE) $2 \circ$ $15 \circ 0 \circ$ Bifficiency (= (CPM-Background) / DPM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                      |                   | N/A             |
| Battery Check     Ok     Olf       Source Check Reading (1)     \$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | High Voltage                         | ivit              | NA              |
| Source Check Reading (1) $\overline{200}$ $\overline{15000}$<br>Source Check Reading (2) $\overline{500}$ $\overline{15000}$<br>Source Check Reading (3) $\overline{500}$ $\overline{14000}$<br>Source Check Reading (4) $\overline{500}$ $\overline{14000}$<br>Source Check Reading (5) $\overline{500}$ $\overline{14000}$<br>Source Check Reading (5) $\overline{500}$ $\overline{14000}$<br>Source Check Reading (AVERAGE) $\overline{500}$ $\overline{14000}$<br>Material:<br>Scan Background reading (nly 1)<br>Direct Background reading (2) $\overline{100}$ $\overline{100}$<br>Direct Background reading (3) $\overline{300}$ $1000000000000000000000000000000000000$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Battery Check                        | ok                | 014             |
| Source Check Reading (2) $500$ $1500$ Source Check Reading (3) $500$ $14,000$ Source Check Reading (4) $500$ $14,000$ Source Check Reading (5) $500$ $14,000$ Source Check Reading (AVERAGE) $500$ $14,000$ Material: $300$ $14,000$ Material: $300$ $14,000$ Material: $300$ $14,000$ Material: $300$ $14,000$ Direct Background reading (0) 1) $200$ $100$ Direct Background reading (2) $100$ $100$ Direct Background reading (3) $300$ $900$ Direct Background reading (3) $300$ $900$ Direct Background reading (4) $300$ $900$ Direct Background reading (5) $200$ $900$ Direct Background reading (AVERAGE) $220$ $900$ Efficiency (= (CPM-Background) / DPM $5000$ $15,000$ FLAG (= 2X Background) DIRECT $9000$ $15,000$ $15,000$ MID-DAY SOURCE READING $700$ $1400$ $14000$ VEVENING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Source Check Reading (1)             | 500               | 15,000          |
| Source Check Reading (3) $5 \circ 0$ $[4, 0 \circ 0]$ Source Check Reading (4) $5 \circ 0$ $[4, 0 \circ 0]$ Source Check Reading (5) $5 \circ 6$ $[4, 0 \circ 0]$ Source Check Reading (AVERAGE) $5 \circ 6$ $[4, 0 \circ 0]$ Material: $[4, 0 \circ 0]$ Direct Background reading (only 1) $2 \circ 0$ Direct Background reading (2) $1 \circ 0$ Direct Background reading (3) $3 \circ 0$ Direct Background reading (4) $3 \circ 0$ Direct Background reading (5) $2 \circ 0$ Direct Background reading (AVERAGE) $2 \cdot 2$ Efficiency (= (CPM-Background) / DPM $2 \cdot 2$ Efficiency (= (CPM-Background) J CPM $4 \circ 0$ FLAG (= 2X Background) DIRECT $4 \circ 0$ MID-DAY SOURCE READING $4 \circ 0$ MID-DAY SOURCE READING $4 \circ 0$ MID-DAY SOURCE READING $5 \circ 0$ EVENING SOURCE READING $2 \circ 0$ VENNIG BACKGROUND READING $2 \circ 0$ Morning check performed by $Pam$ $8 \cdot 0$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Source Check Reading (2)             | 500               | 15,000          |
| Source Check Reading (4) 500 (14,000)<br>Source Check Reading (5) 500 (14,000)<br>Source Check Reading (AVERAGE) 506 (14,000)<br>Material:<br>Scan Background reading (AVERAGE) 506 (14,000)<br>Material:<br>Scan Background reading (0) 1)<br>Direct Background reading (2) (10<br>Direct Background reading (3) 30<br>Direct Background reading (4) 30<br>Direct Background reading (5) 20<br>Direct Background reading (6) 20<br>Direct Background reading (5) 20<br>Efficiency (= (CPM-Background) / DPM<br>FLAG (= 2X Background) DIRECT<br>MID-DAY SOURCE READING 40<br>FLAG (= 2X Background) DIRECT<br>MID-DAY SOURCE READING 70<br>MID-DAY SOURCE READING 70<br>MID Morning check performed by<br>Pana 8: DOC 0000 (2957 Municid 80°<br>MID-DAY SOURCE READING 70<br>MID-DAY SOURCE READING 70<br>MID-DAY SOURCE READING 70<br>MID-DAY SOURCE READING 70<br>MID MORNING 70<br>MID                                                                             | Source Check Reading (3)             | 500               | 14,000          |
| Source Check Reading (5) 500 (4,500)<br>Source Check Reading (AVERAGE) 506 (4,000)<br>Material:<br>Scan Background reading (only 1)<br>Direct Background reading (1) 20<br>Direct Background reading (2) (0<br>Direct Background reading (3) 30<br>Direct Background reading (3) 30<br>Direct Background reading (5) 20<br>Direct Background reading (5) 20<br>Direct Background reading (6) 20<br>Direct Background reading (7) 20<br>Direct Background reading (7) 20<br>Direct Background reading (6) 20<br>Direct Background reading (7) 20<br>MiD-DAY SOURCE READING 70<br>EVENING SOURCE READING 70<br>NA<br>EVENING SOURCE READING 70<br>NA<br>Book 00<br>NA<br>Morning check performed by<br>Pan 8:00<br>Direct 90<br>NA<br>Evening check performed by<br>Pan 8:00<br>Direct 90<br>Direct 90 | Source Check Reading (4)             | 500               | 14,050          |
| Source Check Reading (AVERAGE) 506 (4, 400<br>Material:<br>Scan Background reading (only 1)<br>Direct Background reading (1) 20<br>Direct Background reading (2) (D<br>Direct Background reading (3) 30<br>Direct Background reading (4) 30<br>Direct Background reading (5) 20<br>Direct Background reading (6) 20<br>Direct Background reading (6) 20<br>Direct Background reading (7) 20<br>Direct Background reading (1) 20<br>Direct Background reading (1) 20<br>Direct Background reading (1) 20<br>Direct Background reading (2) (10<br>Direct Background reading (2) (10<br>Direct Background Packground) / DPM<br>FLAG (= 2X Background) / DPM<br>FLAG (= 2X Background) SCANNING<br>FLAG (= 2X Background) DIRECT<br>MID-DAY SOURCE READING 400<br>EVENING SOURCE READING 20<br>NA<br>EVENING SOURCE READING 500<br>LS, 200<br>NA<br>Morning check performed by Pan 8:002 0000 (ast humid 80°<br>Mid-day check performed by Pan (2:42, max by sum humid 80°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Source Check Reading (5)             | 500               | 14,000          |
| Material:       WM         Scan Background reading (only 1)       20         Direct Background reading (1)       20         Direct Background reading (2)       (D         Direct Background reading (3)       30         Direct Background reading (3)       30         Direct Background reading (4)       30         Direct Background reading (5)       20         Efficiency (= (CPM-Background) / DPM       22         Efficiency (= (CPM-Background) / DPM       20         FLAG (= 2X Background) SCANNING       20         FLAG (= 2X Background) DIRECT       49 0         MID-DAY SOURCE READING       20         MID-DAY SOURCE READING       20         EVENING SOURCE READING       500         EVENING BACKGROUND READING       20         NA       20         Morning check performed by       Pam         Rem       12:420       mod v Snan y hum id 80°         Mid-day check performed by       0.000       12:420       0.000         Evening check apformed by       0.000       9.000       10.000 <td>Source Check Reading (AVERAGE)</td> <td>500</td> <td>14,400</td>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Source Check Reading (AVERAGE)       | 500               | 14,400          |
| Scan Background reading (only 1)       20         Direct Background reading (2)       (D         Direct Background reading (2)       (D         Direct Background reading (3)       30         Direct Background reading (4)       30         Direct Background reading (5)       20         Direct Background reading (5)       20         Direct Background reading (AVERAGE)       2.2         Efficiency (= (CPM-Background) / DPM         FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING       40 0         EVENING SOURCE READING       20         EVENING SOURCE READING       20         EVENING BACKGROUND READING       20         NA       8:00         Morning check performed by       Pam 8:00         Mid-day check performed by       Pam 8:00         Kash performed by       0/20         Mid-day check performed by       0/20         Function check performed by       0/20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Material:                            |                   |                 |
| Direct Background reading (1)       20         Direct Background reading (2)       (D)         Direct Background reading (3)       30         Direct Background reading (3)       30         Direct Background reading (4)       30         Direct Background reading (5)       20         Direct Background reading (AVERAGE)       22         Efficiency (= (CPM-Background) / DPM         FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING       490         EVENING SOURCE READING       700         NID-DAY BACKGROUND READING       700         EVENING SOURCE READING       700         VENING BACKGROUND READING       700         Wid-day check performed by       Pom         Background by       Pom         Rom (12:470       Mod y Source (est humid & 0)         Funning check performed by       0/m         Rom (12:470       Mod y Source (est humid & 0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Scan Background reading (only 1)     | U.P.              |                 |
| Direct Background reading (1)       20         Direct Background reading (2)       (D         Direct Background reading (3)       30         Direct Background reading (4)       30         Direct Background reading (5)       20         Direct Background reading (5)       20         Direct Background reading (AVERAGE)       22         Efficiency (= (CPM-Background) / DPM         FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING       40 0         MID-DAY SOURCE READING       40 0         EVENING SOURCE READING       70         MID-DAY BACKGROUND READING       70         EVENING BACKGROUND READING       70         Morning check performed by       Pan 8:00c         Mid-day check performed by       Pan 8:00c         Mid-day check performed by       Pan 8:00c         Mid-day check performed by       0/m         Funning check performed by       0/m         Mid-day check performed by       0/m         Evening check performed by       0/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                      |                   |                 |
| Direct Background reading (2)       (D         Direct Background reading (3)       30         Direct Background reading (4)       30         Direct Background reading (5)       20         Direct Background reading (5)       20         Direct Background reading (5)       20         Direct Background reading (AVERAGE)       22         Efficiency (= (CPM-Background) / DPM         FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING       4000         MID-DAY SOURCE READING       4000         EVENING SOURCE READING       20         MA       500         EVENING BACKGROUND READING       20         Morning check performed by       Pam         Ram       8-002       0xxx (cast Municid Store)         Mid-day check performed by       Pam       8-002         Mid-day check performed by       Pam       8-002       0xxx (cast Municid Store)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Direct Background reading (1)        | 20                |                 |
| Direct Background reading (3)       30         Direct Background reading (4)       30         Direct Background reading (5)       20         Direct Background reading (5)       20         Direct Background reading (AVERAGE)       22         Efficiency (= (CPM-Background) / DPM         FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING         WID-DAY SOURCE READING         VP 30         IS, 000         NA         EVENING SOURCE READING         EVENING BACKGROUND READING         VP 30         IS, 000         IS, 000         IS, 000         IS, 000         IS, 000         EVENING BACKGROUND READING         Pam         8:002         NA         Morning check performed by         Pam         8:002       0////////////////////////////////////                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Direct Background reading (2)        | 10                |                 |
| Direct Background reading (4)     30       Direct Background reading (5)     20       Direct Background reading (AVERAGE)     22       Efficiency (= (CPM-Background) / DPM       FLAG (= 2X Background) SCANNING       FLAG (= 2X Background) DIRECT       MID-DAY SOURCE READING       WID-DAY BACKGROUND READING       EVENING SOURCE READING       EVENING BACKGROUND READING       EVENING BACKGROUND READING       V       Morning check performed by       Mid-day check performed by       Mid-day check performed by       Ohm     84°       Evening check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Direct Background reading (3)        | 30                | W               |
| Direct Background reading (5)       ZO         Direct Background reading (AVERAGE)       ZZ         Efficiency (= (CPM-Background) / DPM         FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING         MID-DAY SOURCE READING         ZO         MID-DAY BACKGROUND READING         EVENING SOURCE READING         EVENING SOURCE READING         ZO         MA         EVENING BACKGROUND READING         ZO         NA         Morning check performed by         Rem       12:47, mox(y sum y hum int 80)         Evening check performed by         Ohm       840 SUK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Direct Background reading (4)        | 30                | y y             |
| Direct Background reading (AVERAGE)     22       Efficiency (= (CPM-Background) / DPM       FLAG (= 2X Background) SCANNING       FLAG (= 2X Background) DIRECT       MID-DAY SOURCE READING       MID-DAY SOURCE READING       MID-DAY BACKGROUND READING       EVENING SOURCE READING       EVENING SOURCE READING       EVENING SOURCE READING       EVENING BACKGROUND READING       Dom       Morning check performed by       Pan       8:00c       Other       Cast Municid       BO'       Evening check performed by       Rom       I2:47       Morning check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Direct Background reading (5)        | 20                | /               |
| Efficiency (= (CPM-Background) / DPM<br>FLAG (= 2X Background) SCANNING<br>FLAG (= 2X Background) DIRECT<br>MID-DAY SOURCE READING<br>MID-DAY BACKGROUND READING<br>EVENING SOURCE READING<br>EVENING BACKGROUND READING<br>EVENING BACKGROUND READING<br>MA<br>Morning check performed by<br>Mid-day check performed by<br>Mid-day check performed by<br>Ma<br>Evening check performed by<br>Ma<br>Morning check performed by<br>Ma<br>Morning check performed by<br>Ma<br>Morning check performed by<br>Ma<br>Morning check performed by<br>Mid-day check performed                                                                                                     | Direct Background reading (AVERAGE)  | 22                | 1.              |
| FLAG (= 2X Background) SCANNING         FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING         MID-DAY BACKGROUND READING         ZO         MID-DAY BACKGROUND READING         EVENING SOURCE READING         EVENING BACKGROUND READING         Morning check performed by         Pom       8:00x         Mid-day check performed by         Pom         Bid-day check performed by         Ohm       84°         Evening check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Efficiency (= (CPM-Background) / DPM |                   |                 |
| FLAG (= 2X Background) DIRECT         MID-DAY SOURCE READING         MID-DAY BACKGROUND READING         ZD         MID-DAY BACKGROUND READING         EVENING SOURCE READING         EVENING BACKGROUND READING         VD         NA         Morning check performed by         Mid-day check performed by         Pan         8:00c         0/m         6:40         Check performed by         Pan         12:47p         Mode performed by         Pan         12:47p         Mode performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | FLAG ( = 2X Background) SCANNING     | Fill              |                 |
| MID-DAY SOURCE READING40015,000MID-DAY BACKGROUND READING70NAEVENING SOURCE READING50015,000EVENING BACKGROUND READING20NAMorning check performed byPom 8:00c Over Cast Mornid 80°Mid-day check performed byRm 17:47, most y sunny humid 80°Evening check performed by0/m 64° 545, Communic 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | FLAG ( = 2X Background) DIRECT       |                   |                 |
| MID-DAY BACKGROUND READING       ZO       NA         EVENING SOURCE READING       500       15,000         EVENING BACKGROUND READING       ZO       NA         Morning check performed by       Pon 8:002 Over Cast Nomid 80°         Mid-day check performed by       Rm 12:470 most y sunny humid 80°         Evening check performed by       0/m 44°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MID-DAY SOURCE READING               | 400               | 15.000          |
| EVENING SOURCE READING     500     15,000       EVENING BACKGROUND READING     20     NA       Morning check performed by     Pom 8:00c Over Cast himid 80°       Mid-day check performed by     Rm 12:47, most v sum himid 80°       Evening check performed by     0/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      | 20                | AIA             |
| EVENING BACKGROUND READING<br>Morning check performed by<br>Mid-day check performed by<br>Evening check performed by<br>Mid-day check performed by<br>Evening check performed by<br>Ev                                                                                                            |                                      | tan               | 15000           |
| Morning check performed by Pon 8:00c Over Cast humid 80°<br>Mid-day check performed by Rm 12:47, mot usuary humid 80°<br>Evening check performed by 0 humid 80°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                      | 7.0               | AIA.            |
| Mid-day check performed by Rm 12:47, mothy sunny humid BO"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Morning check performed by           | Pom & D. Durch    | cost him il Cos |
| Evening check performed by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Mid-day check performed by           | Rm 12:47 mart     | Sumphing to     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Evening check performed by           | abre and the rule | hus hus h       |

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| DATE: \$/11/01                       |               | PAGE 47 OF 58 |
|--------------------------------------|---------------|---------------|
| Source                               | Tc-99         | Cs-137        |
| Source Type                          | Alpha         | Gamma         |
| Calibration Date                     | 4/3/2001      | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001     | 9/30/2001     |
| Serial Number                        | 61457         | 61457         |
| Source emission rate                 | 0.05          | 0.01          |
| Instrument Channel                   | N/A           | N/A           |
| High Voltage                         | NA            | NA            |
| Battery Check                        | DL            | 014           |
| Source Check Reading (1)             | 500           | 15000         |
| Source Check Reading (2)             | 400           | 14000         |
| Source Check Reading (3)             | 500           | 14000         |
| Source Check Reading (4)             | 500           | 14000         |
| Source Check Reading (5)             | 500           | 14000         |
| Source Check Reading (AVERAGE)       | 480           | 14200         |
|                                      |               |               |
| Material:                            | all all       |               |
| Scan Background reading (only 1)     |               |               |
| Direct Background reading (1)        | 20            |               |
| Direct Background reading (2)        | 16            |               |
| Direct Background reading (3)        | 20            |               |
| Direct Background reading (4)        | 20            |               |
| Direct Background reading (5)        | 20            |               |
| Direct Background reading (AVERAGE)  | 18            |               |
|                                      |               |               |
| Efficiency (= (CPM-Background) / DPM |               |               |
| FLAG ( = 2X Background) SCANNING     | cill          |               |
| FLAG ( = 2X Background) DIRECT       |               |               |
|                                      | 500           | 15.200        |
|                                      | 20            | NA            |
|                                      | 500           |               |
|                                      | 20            | NA            |
| Merning shock performed by           | Pm 8:35 C.    | 760           |
| Mid day check performed by           | Pm 11:570 C.  | 780           |
| Evening check performed by           | JEH 1800 SUMM | 820           |
| Evening check periorned by           |               |               |

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| DATE: \$/12/21                       |                    | PAGE48 OF 58 |
|--------------------------------------|--------------------|--------------|
| Source                               | Tc-99              | Cs-137       |
| Source Type                          | Alpha              | Gamma        |
| Calibration Date                     | 4/3/2001           | 4/3/2001     |
| Out of Cal Date                      | 9/30/2001          | 9/30/2001    |
| Serial Number                        | 01457              | 61457        |
| Instrument Channel                   | 0.03 ,<br>N/A      | 0.01<br>N/A  |
| High Voltage                         | WA                 | NA           |
| Battery Check                        | ok                 | oK           |
| Source Check Reading (1)             | 400                | 14,000       |
| Source Check Reading (2)             | 400                | 14,000       |
| Source Check Reading (3)             | 500                | 14,000       |
| Source Check Reading (4)             | 500                | 14,000       |
| Source Check Reading (5)             | 400                | 14,000       |
| Source Check Reading (AVERAGE)       | 440                | 14,000       |
| Material:                            | VINY               |              |
| Scan Background reading (only 1)     |                    |              |
|                                      |                    |              |
| Direct Background reading (1)        | 20                 |              |
| Direct Background reading (2)        | 30                 |              |
| Direct Background reading (3)        | 20                 | W            |
| Direct Background reading (4)        | 30                 | y y          |
| Direct Background reading (5)        | 20                 | -/           |
| Direct Background reading (AVERAGE)  | 29                 | /            |
| Efficiency (= (CPM-Background) / DPM |                    |              |
| FLAG ( = 2X Background) SCANNING     | int                |              |
| FLAG ( = 2X Background) DIRECT       |                    |              |
| MID-DAY SOURCE READING               | 500                | 14000        |
| MID-DAY BACKGROUND READING           | 20                 | ND           |
| EVENING SOURCE READING               | NAT USED A         | ET DILLAN'   |
| EVENING BACKGROUND READING           | IVOL VIEV A        | TER 1900     |
| Morning check performed by           | Rom 10:25 a Overca | st 78°       |
| Mid-day check performed by           | JRU 1400           | NA           |
| Evening check performed by           | NA                 | NA           |

batteries changed after check

| DATE: 5/13/01                        |               | PAGE49 OF 58       |
|--------------------------------------|---------------|--------------------|
| Source                               | TC-99         | Cs-137             |
| Source Type                          | Alpha         | Gamma              |
| Calibration Date                     | 4/3/2001      | 4/3/2001           |
| Out of Cal Date                      | 9/30/2001     | 9/30/2001          |
| Serial Number                        | 61457         | . 61457            |
| Source emission rate                 | 0.05          | 0.01               |
| Instrument Channel                   | N/A           | N/A                |
| High Voltage                         | NA            | NA                 |
| Battery Check                        | ok            | 014                |
| Source Check Reading (1)             | 400           | 15,000             |
| Source Check Reading (2)             | 500           | 14,000             |
| Source Check Reading (3)             | 500           | 14,000             |
| Source Check Reading (4)             | 500           | 15,000             |
| Source Check Reading (5)             | 400           | 15,000             |
| Source Check Reading (AVERAGE)       | 460           | 14,630             |
| Material:                            |               |                    |
| Scan Background reading (only 1)     | 100           |                    |
|                                      |               |                    |
| Direct Background reading (1)        | 20            |                    |
| Direct Background reading (2)        | 20            | . /                |
| Direct Background reading (3)        | 10            | ille               |
| Direct Background reading (4)        | 20            | ×                  |
| Direct Background reading (5)        | 10            | /                  |
| Direct Background reading (AVERAGE)  | 16            | /                  |
| Efficiency (= (CPM-Background) / DPM |               |                    |
| FLAG ( = 2X Background) SCANNING     | LUE           |                    |
| FLAG ( = 2X Background) DIRECT       |               |                    |
|                                      |               |                    |
| MID-DAY SOURCE READING               | 500           | 15000              |
| MID-DAY BACKGROUND READING           | 30            | NA                 |
| EVENING SOURCE READING               | 500           | 15000              |
| EVENING BACKGROUND READING           | 20            | NA                 |
| Morning check performed by           | Ron 8:00a 76° | Partly Sunny humid |
| Mid-day check performed by           | JRH, 1315     | FURNI Working      |
| Evening check performed by           | JR41 1610     | NA                 |

| Pancake | G-M | Serial | Number | 61457/266 | 57 |
|---------|-----|--------|--------|-----------|----|
|         |     |        |        |           |    |

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| DATE: 8/14/01                       |                  | PAGE50 OF 58 |
|-------------------------------------|------------------|--------------|
| Source                              | Tc-99            | Cs-137       |
| Source Type                         | Alpha            | Gamma        |
| Calibration Date                    | 4/3/2001         | 4/3/2001     |
| Out of Cal Date                     | 9/30/2001        | 9/30/2001    |
| Source emission rate                | 0.05             | 61457        |
| Instrument Channel                  | 0.05<br>NI/A     | 0.01<br>NI/A |
|                                     |                  |              |
| High Voltage                        | NA               | NA           |
| Battery Check                       | DK               | OK           |
| Source Check Reading (1)            | 500              | 15000        |
| Source Check Reading (2)            | 500              | 1.5000       |
| Source Check Reading (3)            | 500              | 15000        |
| Source Check Reading (4)            | 400              | 14000        |
| Source Check Reading (5)            | 400              | 15000        |
| Source Check Reading (AVERAGE)      | 460              | 14800        |
| N                                   |                  |              |
|                                     | Kill             |              |
| Scan Background reading (only 1)    |                  |              |
| Direct Background reading (1)       | 10               | /            |
| Direct Background reading (2)       | 20               |              |
| Direct Background reading (3)       | 30               | ill          |
| Direct Background reading (4)       | 20               |              |
| Direct Background reading (5)       | 20               |              |
| Direct Background reading (AVERAGE) | 20               |              |
| Efficiency (= (CPM Reckaround) (DDM |                  |              |
| ELAG ( = 2X Background) SCANINING   | VXV              |              |
|                                     | lia              |              |
| I LAO ( - 27 Backyrouniu) DIRECT    |                  |              |
| MID-DAY SOURCE READING              | 500              | 14,000       |
| MID-DAY BACKGROUND READING          | 20               | NA           |
| EVENING SOURCE READING              | 406              | 14000        |
| EVENING BACKGROUND READING          | 30               | NA           |
| Morning check performed by          | Rom 8:102 SLANN  | 742 humid    |
| Mid-day check performed by          | RAM 12:300 SUMMY | 768          |
| Evening check performed by          | Jel 1700 Somy    | 80°F         |

| DATE: \$/20/01                       |                | PAGES OF 58    |
|--------------------------------------|----------------|----------------|
| Source                               | Tc-99          | Cs-137         |
| Source Type                          | Alpha          | Gamma          |
| Calibration Date                     | 4/3/2001       | 4/3/2001       |
| Out of Cal Date                      | 9/30/2001      | 9/30/2001      |
| Serial Number                        | 61457          | 61457          |
| Source emission rate                 | 0.05           | 0.01           |
| Instrument Channel                   | N/A            | N/A            |
| High Voltage                         | NA             | NA             |
| Battery Check                        | ok             | OK             |
| Source Check Reading (1)             | 500            | 15,000         |
| Source Check Reading (2)             | 400            | 14,000         |
| Source Check Reading (3)             | 500            | 15,000         |
| Source Check Reading (4)             | 500            | 14,000         |
| Source Check Reading (5)             | 500            | 14,000         |
| Source Check Reading (AVERAGE)       | 480            | 14,400         |
|                                      |                |                |
| Material:                            | VILL           |                |
| Scan Background reading (only 1)     |                |                |
| Direct Background reading (1)        | 30             |                |
| Direct Background reading (2)        | 30             |                |
| Direct Background reading (3)        | 20             | 1 May          |
| Direct Background reading (4)        | 30             | /              |
| Direct Background reading (5)        | 20             |                |
| Direct Background reading (AVERAGE)  | 20             | /              |
| Efficiency (= (CDM Reckground) / DDM |                |                |
|                                      | VILV           |                |
| ELAC (= 2X Background) SCANNING      |                |                |
| FLAG ( = 2A background) DIRECT       |                | and the second |
| MID-DAY SOURCE READING               | 20500 Ram      | 15,000         |
| MID-DAY BACKGROUND READING           | 20             | NA             |
| EVENING SOURCE READING               | 500            | 15,000         |
| EVENING BACKGROUND READING           | 20             | NA             |
| Morning check performed by           | Rom 9:30 a Jun | 1 hund 23°     |
| Mid-day check performed by           | KRH 1227 SUM   | my cumulid 200 |
| Evening check performed by           | Rom 4:150 Sum  | , in-mid 79°   |

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| DATE: 8/21/01                        |                      | PAGE 52-OF 58 |
|--------------------------------------|----------------------|---------------|
| Source                               | Tc-99                | Cs 137        |
| Source Type                          | Alpha                | Gamma         |
| Calibration Date                     | 4/3/2001             | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001            | 9/30/2001     |
| Serial Number                        | 0.05                 | 0.01          |
| Instrument Channel                   | N/A                  | N/A           |
| High Voltage                         | NA                   | NA            |
| Battery Check                        | ok                   | 012           |
| Source Check Reading (1)             | 500                  | 14,000        |
| Source Check Reading (2)             | 400                  | 15,000        |
| Source Check Reading (3)             | 500                  | 14,000        |
| Source Check Reading (4)             | 400                  | 14,000        |
| Source Check Reading (5)             | 400                  | 14,000        |
| Source Check Reading (AVERAGE)       | 440                  | 14,200        |
| Material:                            | will.                |               |
| Scan Background reading (only 1)     | LAU                  |               |
|                                      |                      |               |
| Direct Background reading (1)        | 20                   |               |
| Direct Background reading (2)        | 20                   |               |
| Direct Background reading (3)        | 20                   |               |
| Direct Background reading (4)        | 30                   | Well          |
| Direct Background reading (5)        | 20                   | 1.            |
| Direct Background reading (AVERAGE)  | 2.2                  |               |
| Efficiency (= (CPM-Background) / DPM |                      |               |
| FLAG ( = 2X Background) SCANNING     | KASK                 |               |
| FLAG ( = 2X Background) DIRECT       |                      |               |
| MID-DAY SOURCE READING               | 500                  | 15,000        |
| MID-DAY BACKGROUND READING           | 7.0                  | NA            |
| EVENING SOURCE READING               | 500                  | 15,000        |
| EVENING BACKGROUND READING           | 20                   | NA            |
| Morning check performed by           | Rom 7:55 a Diercast  | 730 humid     |
| Mid-day check performed by           | Rom 12:20 p overcast | 750           |
| Evening check performed by           | Rom 5:350 Sunny      | 780           |

| DATE: 8/22/01                        |                 | PAGE53 OF 58  |
|--------------------------------------|-----------------|---------------|
| Source                               | Tc-99           | Cs-137        |
| Source Type                          | Alpha           | Gamma         |
| Calibration Date                     | 4/3/2001        | 4/3/2001      |
| Out of Cal Date                      | 9/30/2001       | 9/30/2001     |
| Serial Number                        | 61457           | 61457         |
| Source emission rate                 | 0.05            | 0.01          |
| Instrument Channel                   | N/A             | N/A           |
| High Voltage                         | NA              | NA            |
| Battery Check                        | OK              | DIK           |
| Source Check Reading (1)             | 500             | 14,000        |
| Source Check Reading (2)             | 400             | 15,000        |
| Source Check Reading (3)             | 500             | 14,000        |
| Source Check Reading (4)             | 500             | 14,000        |
| Source Check Reading (5)             | 500             | 14,000        |
| Source Check Reading (AVERAGE)       | 480             | 19,200        |
| Material:                            | Uly             |               |
| Scan Background reading (only 1)     |                 |               |
|                                      |                 |               |
| Direct Background reading (1)        | 20              |               |
| Direct Background reading (2)        | 20              |               |
| Direct Background reading (3)        | 30              | - W           |
| Direct Background reading (4)        | 20              | Her .         |
| Direct Background reading (5)        | 26              | /             |
| Direct Background reading (AVERAGE)  | 22              | /             |
| Efficiency (= (CPM-Background) / DPM |                 |               |
| ELAG ( = 2X Background) SCANNING     | Ý.              | P             |
| FLAG ( = 2X Background) DIRECT       |                 |               |
|                                      |                 |               |
| MID-DAY SOURCE READING               | 500             | 15,060        |
| MID-DAY BACKGROUND READING           | 20              | NA            |
| EVENING SOURCE READING               | 500             | 15,000        |
| EVENING BACKGROUND READING           | 20              | NA            |
| Morning check performed by           | Rom Sonny 7:35  | a 720 harmold |
| Mid-day check performed by           | em Sunn 3:150   | 75° hum. l    |
| Evening check performed by           | Rom Sinny 6:35p | 78°           |

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| DATE: 8/23/01                        |                | PAGE54 OF 58     |
|--------------------------------------|----------------|------------------|
| Source                               | JC-99          | Cs-137           |
| Source Type                          | Alpha Bele     | Gamma Camma      |
| Calibration Date                     | 4/3/2001       | 4/3/2001         |
| Out of Cal Date                      | 9/30/2001      | 9/30/2001        |
| Serial Number                        | 61457          | 61457            |
| Instrument Channel                   | 0.05           | 0.01<br>N/A      |
|                                      |                | IN/A             |
| High Voltage                         | NX             | NA               |
| Battery Check                        | OK             | 014              |
| Source Check Reading (1)             | 500            | 16000            |
| Source Check Reading (2)             | 400            | 15000            |
| Source Check Reading (3)             | 500            | 1500             |
| Source Check Reading (4)             | 500            | 15000            |
| Source Check Reading (5)             | 400            | 15000            |
| Source Check Reading (AVERAGE)       | 460            | 15200            |
| Material:                            | ichtha.        |                  |
| Scan Background reading (only 1)     |                |                  |
|                                      |                |                  |
| Direct Background reading (1)        | 30             |                  |
| Direct Background reading (2)        | 20             |                  |
| Direct Background reading (3)        | 20             | July             |
| Direct Background reading (4)        | 30             | y y              |
| Direct Background reading (5)        | 20             |                  |
| Direct Background reading (AVERAGE)  | 24             | / .              |
| Efficiency (= (CPM-Background) / DPM |                |                  |
| FLAG ( = 2X Background) SCANNING     | Vell           |                  |
| FLAG ( = 2X Background) DIRECT       |                |                  |
| MID-DAY SOURCE READING               | 500            | 15,000           |
| MID-DAY BACKGROUND READING           | 20             | MA               |
| EVENING SOURCE READING               | 500            | 15,000           |
| EVENING BACKGROUND READING           | 20             | NA               |
| Morning check performed by           | Jet 0820       | NA               |
| Mid-day check performed by           | Rom 12:350 76° | Dueverst humid   |
| Evening check performed by           | Rom 5:050 76"  | Part Sunny humid |

| DATE: 8/26/01                        |                | PAGE55 OF 58                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source                               | •Tc-99         | Cs-137                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Source Type                          | Alpha Alpha    | Gamma 📻 📜 👘                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Calibration Date                     | 4/3/2001       | 4/3/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Out of Cal Date                      | 9/30/2001      | 9/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Serial Number                        | 61457          | 61457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source emission rate                 | 0.05           | 0.01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Instrument Channel                   | N/A            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| High Voltage                         | - NA           | - NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Battery Check                        | ok             | ok                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Source Check Reading (1)             | 520            | 15000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source Check Reading (2)             | 400            | 15000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source Check Reading (3)             | 500            | 14000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source Check Reading (4)             | 400            | 14000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source Check Reading (5)             | 500            | 14000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source Check Reading (AVERAGE)       | 460            | 14400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Material:                            | VOLL           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Scan Background reading (only 1)     |                | and the second se |
|                                      |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Direct Background reading (1)        | 20             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Direct Background reading (2)        | 20             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Direct Background reading (3)        | 20             | 111                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Direct Background reading (4)        | 20             | Las                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Direct Background reading (5)        | 40             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Direct Background reading (AVERAGE)  | 24             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Efficiency (= (CPM_Background) / DPM |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ELAG (= 2X Background) SCANNING      | ALLY           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FLAG (= 2X Background) DIRECT        |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Ener Ex Buokgioundy Birteer          |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MID-DAY SOURCE READING               | not used in AM | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MID-DAY BACKGROUND READING           | NA             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| EVENING SOURCE READING               | not used in PM | 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| EVENING BACKGROUND READING           | NA             | UP/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Morning check performed by           | KIF /          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Mid-day check performed by           | Valle          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Evening check performed by           |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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| DATE: 8.27.01                        | 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - | PAGES6 OF 58 |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------|
| Source                               | Tc-99                                                                                                           | Cs≃137       |
| Source Type                          | Alpha                                                                                                           | Gamma        |
| Calibration Date                     | 4/3/2001                                                                                                        | 4/3/2001     |
| Serial Number                        | 9/30/2001                                                                                                       | 9/30/2001    |
| Source emission rate                 | 0.05                                                                                                            | . 0.01       |
| Instrument Channel                   | N/A                                                                                                             | N/A          |
| High Voltage                         | NA                                                                                                              | NA           |
| Battery Check                        | 014                                                                                                             | +4000 Ell    |
| Source Check Reading (1)             | 500                                                                                                             | 15000        |
| Source Check Reading (2)             | 500                                                                                                             | 14000        |
| Source Check Reading (3)             | 600                                                                                                             | 14000        |
| Source Check Reading (4)             | 600                                                                                                             | 19000        |
| Source Check Reading (5)             | 500                                                                                                             | 14000        |
| Source Check Reading (AVERAGE)       | 540                                                                                                             | 14200        |
| Material:                            | VAU                                                                                                             |              |
| Scan Background reading (only 1)     | CONTRACTOR AND                                                              |              |
|                                      |                                                                                                                 |              |
| Direct Background reading (1)        | 20                                                                                                              | /            |
| Direct Background reading (2)        | 40                                                                                                              |              |
| Direct Background reading (3)        | 30                                                                                                              |              |
| Direct Background reading (4)        | 40                                                                                                              | Y            |
| Direct Background reading (5)        | 40                                                                                                              |              |
| Direct Background reading (AVERAGE)  | - 34                                                                                                            |              |
| Efficiency (= (CPM-Background) / DPM |                                                                                                                 |              |
| FLAG ( = 2X Background) SCANNING     | UND-                                                                                                            |              |
| FLAG ( = 2X Background) DIRECT       |                                                                                                                 |              |
| MID-DAY SOURCE READING               | 400                                                                                                             | 15000        |
| MID-DAY BACKGROUND READING           | 20                                                                                                              | NA           |
| EVENING SOURCE READING               | র্বন্য                                                                                                          | 15000        |
| EVENING BACKGROUND READING           | 20                                                                                                              | NA           |
| Morning check performed by           | KLK CE46                                                                                                        |              |
| Mid-day check performed by           | JRH 1500                                                                                                        | Val          |
| Evening check performed by           | KUK (200                                                                                                        | /.           |

| DATE: 8.28.01                        |             | PAGE57OF 58                      |
|--------------------------------------|-------------|----------------------------------|
| Source                               | Tc-99       | Cs-137                           |
| Source Type                          | Alpha Alpha | Gamma                            |
| Calibration Date                     | 4/3/2001    | 4/3/2001                         |
| Out of Cal Date                      | 9/30/2001   | 9/30/2001                        |
| Serial Number                        | 61457       | 0.01                             |
| Source emission rate                 | 0.05        | 0.01                             |
| Instrument Channel                   | IN/A        | N/A                              |
| High Voltage                         | NA          | NA                               |
| Battery Check                        | ole         | OK                               |
| Source Check Reading (1)             | 500         | 14000                            |
| Source Check Reading (2)             | 500)        | 14000                            |
| Source Check Reading (3)             | 500         | 14000                            |
| Source Check Reading (4)             | 4:00        | 14000                            |
| Source Check Reading (5)             | 400         | 14000                            |
| Source Check Reading (AVERAGE)       | 460         | 14,000                           |
| Material:                            | 1(2)        |                                  |
| Scan Background reading (only 1)     | R.          |                                  |
|                                      |             |                                  |
| Direct Background reading (1)        | 26          |                                  |
| Direct Background reading (2)        | 20          |                                  |
| Direct Background reading (3)        | 20          |                                  |
| Direct Background reading (4)        | 20          | (h)                              |
| Direct Background reading (5)        | 20          | -/                               |
| Direct Background reading (AVERAGE)  | 20          | /                                |
| Efficiency (= (CPM-Background) / DPM |             |                                  |
| FLAG (= 2X Background) SCANNING      | 111         |                                  |
| FLAG ( = 2X Background) DIRECT       |             |                                  |
|                                      |             | A CONTRACTOR OF THE OWNER OF THE |
| MID-DAY SOURCE READING               | 500         | 15000                            |
| MID-DAY BACKGROUND READING           | 20          | NA                               |
| EVENING SOURCE READING               | 600         | 15000                            |
| EVENING BACKGROUND READING           | 20          | NA                               |
| Morning check performed by           | JRH 0730    |                                  |
| Mid-day check performed by           | RATIF 1230  | W                                |
| Evening check performed by           | Kash 2016   |                                  |

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| DATE: 8.34.01                        |           | PAGES 8 OF 58     |
|--------------------------------------|-----------|-------------------|
| Source                               | IC-99     | Cs-137            |
| Calibration Date                     | 4/3/2001  | Gamma<br>4/3/2001 |
| Out of Cal Date                      | 9/30/2001 | 9/30/2001         |
| Serial Number                        | 61457     | 61457             |
| Source emission rate                 | 0.05      | 0.01              |
| Instrument Channel                   | N/A       | N/A               |
| High Voltage                         | NA        | NA                |
| Battery Check                        | EIC       | 0/L               |
| Source Check Reading (1)             | 500       | 14000             |
| Source Check Reading (2)             | 500       | 14000             |
| Source Check Reading (3)             | 500       | 14000             |
| Source Check Reading (4)             | 400       | 14000             |
| Source Check Reading (5)             | Jou       | (4000             |
| Source Check Reading (AVERAGE)       | 480       | 14000             |
| Material:                            |           |                   |
| Scan Background reading (only 1)     | W         |                   |
|                                      |           |                   |
| Direct Background reading (1)        | 20        | /                 |
| Direct Background reading (2)        | 20        |                   |
| Direct Background reading (3)        | 40        |                   |
| Direct Background reading (4)        | 20        | VI                |
| Direct Background reading (5)        | 60        |                   |
| Direct Background reading (AVERAGE)  |           | /                 |
| Efficiency (= (CPM-Background) / DPM |           |                   |
| FLAG ( = 2X Background) SCANNING     | WIL       |                   |
| FLAG ( = 2X Background) DIRECT       |           |                   |
| MID-DAY SOURCE READING               |           |                   |
| MID-DAY BACKGROUND READING           | inth      |                   |
| EVENING SOURCE READING               |           |                   |
| EVENING BACKGROUND READING           |           |                   |
| Morning check performed by           | KUK       | 7                 |
| Mid-day check performed by           | NA        |                   |
| Evening check performed by           | NA        |                   |

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#### SENECA ARMY DEPOT SEAD-12 RI/FS KK -6-5-2001

| Site: Seneca Army Depot       |             |               |
|-------------------------------|-------------|---------------|
| Project: SEAD-12              |             |               |
| Team: 2 BLACK                 |             |               |
|                               |             | Page 1 of 17  |
| Instrument Type               | Beta        | Gross Gamma   |
| AKA                           | Pancake G-M | Pancake G-M   |
| Make                          | Ludlum      | Ludlum        |
| Model                         | 3           | 3             |
| Serial Number                 | 61390       | 61390         |
| Calibration Date              | 1/30/2001   | 1/30/2001     |
| Out of Cal Date               | 7/29/2001   | 7/29/2001     |
| Probe                         | Gross Gamma | Gross Gamma 5 |
| Make                          | Ludium      | Ludlum        |
| Model                         | 44-9        | 44-9          |
| Serial Number                 | PR019247    | PR019247      |
| Calibration Date              | 1/30/2001   | 1/30/2001     |
| Out of Cal Date               | 7/29/2001   | 7/29/2001     |
| Source                        | Тс-99.      | Cs-137        |
| Source type                   | Alpha       | _Gamma 🚽      |
| Calibration Date              | 4/10/2001   | 4/10/2001     |
| Out of Cal Date               | 3/31/2001   | 3/31/2001     |
| Serial Number                 | 1039-92     | 1845-94       |
| Source emission rate          | 1768566dpm  | 11100dpm      |
| Instrument Channel            | N/A         | N/A           |
| initial instrument efficiency | 5.00%       | . 1.00%       |
| 2 Sigma Range                 | 340-760     | 7166-13301    |

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PARSONS MAIN, INC.

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| CLIENT              | TINMAL FUN<br>"from surface                                                      | CTION CHE                                                                                                                                            | СК |                 | JOB NO<br>BYEKM<br>CKD                                                                                                 | SHEET OF |
|---------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
|                     | Instrument:<br>s/N:                                                              | PANGAKE<br>61390                                                                                                                                     | 6M |                 | BAT:OK                                                                                                                 | 10:00AM                                      |
|                     | BACKGROUNS                                                                       | ><br>Tc-99                                                                                                                                           |    |                 | Source<br>(5-137                                                                                                       | -                                            |
| 1234567891011213415 | 40<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20 | 700<br>400<br>500<br>450<br>600<br>700<br>600<br>750<br>500<br>600<br>400<br>400<br>500<br>600<br>500<br>600<br>500<br>500<br>500<br>500<br>500<br>5 |    | 123456789012345 | 15000<br>10000<br>10000<br>9000<br>9000<br>9000<br>10000<br>10000<br>10000<br>10000<br>10000<br>10000<br>10000<br>9000 |                                              |
|                     | Ava = 23.67                                                                      |                                                                                                                                                      |    | 1               | $t_{10} = 1023$                                                                                                        | 33                                           |

Avg= 13.61 0== 4.87 Avg = 10233.3o = 101.16

#### SENECA ARMY DEPOT SEAD-12 RI/FS

# Pancake G-M Serial Number 51403/51751

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| DATE: 6-6-01                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE 3 OF 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source                               | Tc-99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Cs-137                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Type                          | Alpha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Gamma                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Calibration Date                     | 1/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Out of Cal Date                      | 7/29/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7/29/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Serial Number                        | 61390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 61390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source emission rate                 | 5.00%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.00%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Instrument Channel                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| High Voltage                         | - KUK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | - KUK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Battery Check                        | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source Check Reading (1)             | 350                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2400 10000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Source Check Reading (2)             | 350                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 12000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source Check Reading (3)             | 400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 18000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source Check Reading (4)             | 400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source Check Reading (5)             | 350                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source Check Reading (AVERAGE)       | 370                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Material:                            | KI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Scan Background reading (only 1)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                      | and the second s |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (1)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (2)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (3)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (4)        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (5)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (AVERAGE)  | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Efficiency (= (CPM-Background) / DPM |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FLAG ( = 2X Background) SCANNING     | K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | \$K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| FLAG ( = 2X Background) DIRECT       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MID-DAY SOURCE READING               | notused                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MID-DAY BACKGROUND READING           | in AM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | t.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| EVENING SOURCE READING               | not used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | - Contraction of the contraction |
| EVENING BACKGROUND READING           | in pM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Morning check performed by           | EKM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | EKM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Mid-day check performed by           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | KUN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Evening check performed by           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                               | 7-10front page |                        |
|-------------------------------|----------------|------------------------|
| Site: Seneca Army Depot       |                |                        |
| Project: SEAD-12              |                |                        |
| Team: 2 BLACK                 |                | Contract on the second |
|                               |                | Page4 of 17            |
| Instrument Type               | Beta           | Gross Gamma            |
| АКА                           | Pancake G-M    | Pancake G-M            |
| Make                          | Ludlum         | Ludlum                 |
| Model                         | 3              | 3                      |
| Serial Number                 | 61390          | 61390                  |
| Calibration Date              | 1/30/2001      | 1/30/2001              |
| Out of Cal Date               | 7/29/2001      | 7/29/2001              |
| Probe                         | Gross Gamma    | Gross Gamma            |
| Make                          | Ludlum         | Ludlum                 |
| Model                         | 44-9           | 44-9                   |
| Serial Number                 | PR019247       | PR019247               |
| Calibration Date              | 1/30/2001      | 1/30/2001              |
| Out of Cal Date               | 7/29/2001      | 7/29/2001              |
| Source )                      | Tc-99          | Cs-137                 |
| Source type                   | Alpha          | Gamma                  |
| Calibration Date              | 4/10/2001      | 4/10/2001              |
| Out of Cal Date               | 3/31/2001      | 3/31/2001              |
| Serial Number                 | 1039-92        | 1845-94                |
| Source emission rate          | 1768566dpm     | 11100dpm               |
| Instrument Channel            | N/A            | N/A                    |
| initial instrument efficiency | 5.00%          | 1.00%                  |
| 2 Sigma Range                 | 6876-19357     | 370-680                |

#### SENECA ARMY DEPOT SEAD-12 RI/FS 7-10front page

| SUBJECT Calibration Surve Es<br>Weather, Partly Clouly, |       | JOB NO<br>BYردری<br>CKD | - SHEETOF+<br> |
|---------------------------------------------------------|-------|-------------------------|----------------|
| <u>Cs - 137</u>                                         | te-99 | Bkgd                    | n              |
| 1) 16,000                                               | 500   | 30                      |                |
| 2) 16,000                                               | 500   | 30                      |                |
| 4) 16,000                                               | 500   | 30                      |                |
| 5) 16,000                                               | 500   | 30                      |                |
| 6) 16,000                                               | 500   | 30                      |                |
| 7) 16,000                                               | 500   | 30                      |                |
| 8) 16,000                                               | 500   | 30                      |                |
| 9) 16,000                                               | 500   | 30                      |                |
| 10 16,000                                               | 500   | 30                      |                |
| 16,000                                                  | 500   | 30                      |                |
| 12) 16,000                                              | 500   | 30                      |                |
| 13) 16,000                                              | 500   | 30                      |                |
| 14) 16,000                                              | 500   | 30                      |                |
| 15) 16,000                                              | 500   | 30                      |                |
| a statio                                                |       |                         |                |

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| DATE: 7/10/01                                                                |                                                                                                                 | PAGE (O OF 17 |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|
| Source                                                                       | Tc-99                                                                                                           | Cs-137        |
| Source Type                                                                  | Alpha                                                                                                           | Gamma         |
| Calibration Date                                                             | 1/30/2001                                                                                                       | 1/30/2001     |
| Out of Cal Date                                                              | 7/29/2001                                                                                                       | 7/29/2001     |
| Serial Number                                                                | 61390                                                                                                           | 61390         |
| Source emission rate                                                         | 5.00%                                                                                                           | 1.00%         |
|                                                                              | IN/A                                                                                                            | N/A           |
| High Voltage                                                                 |                                                                                                                 | KUK           |
| Battery Check                                                                | Dic                                                                                                             | 16,000        |
| Source Check Reading (1)                                                     | 500                                                                                                             | 16,000        |
| Source Check Reading (2)                                                     | 500                                                                                                             | 15,000        |
| Source Check Reading (3)                                                     | 500                                                                                                             | 16,000        |
| Source Check Reading (4)                                                     | 509                                                                                                             | 16.000        |
| Source Check Reading (5)                                                     | 007                                                                                                             | ila.000       |
| Source Check Beading (A)/EBACE)                                              |                                                                                                                 | 10/0          |
| Source Check Reading (AVERAGE)                                               | 200                                                                                                             |               |
| Material:                                                                    |                                                                                                                 | Kuk           |
| Scan Background reading (only 1)                                             |                                                                                                                 |               |
|                                                                              | A CONTRACTOR OF |               |
| Direct Background reading (1)                                                | 30                                                                                                              |               |
| Direct Background reading (2)                                                | 20                                                                                                              |               |
| Direct Background reading (3)                                                | 30                                                                                                              |               |
| Direct Background reading (4)                                                | 30                                                                                                              |               |
| Direct Background reading (5)                                                | 20                                                                                                              |               |
| Direct Background reading (AVERAGE)                                          |                                                                                                                 |               |
|                                                                              |                                                                                                                 |               |
| Efficiency (= (CPM-Background) / DPM                                         |                                                                                                                 | 4             |
| FLAG ( = 2X Background) SCANNING                                             | - Ct                                                                                                            |               |
| FLAG ( = 2X Background) DIRECT                                               |                                                                                                                 |               |
|                                                                              | 500                                                                                                             | 11,000        |
|                                                                              | 20                                                                                                              |               |
| MID-DAY BACKGROUND READING                                                   | 500                                                                                                             | 15000         |
| EVENING SOURCE READING                                                       | 70                                                                                                              | 15,000        |
| EVENING BACKGROUND READING                                                   |                                                                                                                 | - KUK         |
| Morning check performed by / </td <td>Cloudy, Humid, 70°</td> <td>- Cur</td> | Cloudy, Humid, 70°                                                                                              | - Cur         |
| Mid-day check performed by                                                   | clear work 14°F                                                                                                 |               |
| Evening check performed by                                                   | Sonny 78° \$ 330                                                                                                |               |

| DATE: 7/11/21                        |                       | PAGE 7 OF 17 |
|--------------------------------------|-----------------------|--------------|
| Source                               | Tc-99                 | Cs-137       |
| Source Type                          | Alpha                 | Gamma        |
| Calibration Date                     | 1/30/2001             | 1/30/2001    |
| Out of Cal Date                      | 7/29/2001             | 7/29/2001    |
| Serial Number                        | 61390                 | 61390        |
| Source emission rate                 | 5.00%                 | 1.00%        |
|                                      | 19/7                  |              |
| High Voltage                         | NA                    | KLIK         |
| Battery Check                        | 2k                    |              |
| Source Check Reading (1)             | 500                   | 15,000       |
| Source Check Reading (2)             | 500                   | 16,000       |
| Source Check Reading (3)             | 500                   | 16,000       |
| Source Check Reading (4)             | 500                   | 16,000       |
| Source Check Reading (5)             | 500                   | 15,000       |
| Source Check Reading (AVERAGE)       | 500                   | 15,600       |
| Material:                            |                       | ELE          |
| Scan Background reading (only 1)     |                       |              |
| Coan Dackground reading (only 1)     |                       |              |
| Direct Background reading (1)        | 20                    |              |
| Direct Background reading (2)        | 20                    | K            |
| Direct Background reading (3)        | 20                    | 14           |
| Direct Background reading (4)        | . 20                  | ľ l          |
| Direct Background reading (5)        | . 30                  |              |
| Direct Background reading (AVERAGE)  | 22                    |              |
| Efficiency (= (CPM-Background) / DPM |                       |              |
| FLAG ( = 2X Background) SCANNING     | EKK                   |              |
| FLAG ( = 2X Background) DIRECT       |                       |              |
|                                      |                       |              |
| MID-DAY SOURCE READING               | 500                   | 15,000       |
| MID-DAY BACKGROUND READING           | 20                    | ELK          |
| EVENING SOURCE READING               | 500                   | 15,000       |
| EVENING BACKGROUND READING           | 20                    | FUK          |
| Morning check performed by           | Rom 7: 776m SUNNY 72" |              |
| Mid-day check performed by           | kies                  |              |
| Evening check performed by           | Rom 5:120 Sunn. 75°   |              |

#### SENECA ARMY DEPOT SEAD-12 RI/FS

## ८। ३९० Pancake G-M Serial Number <del>61468/51761</del> KWL

| DATE: 7/12/01                        |            | PAGE 8 OF 17 |
|--------------------------------------|------------|--------------|
| Source,                              | Tc-99      | Cs-137       |
| Source Type                          | Alpha      | Gamma        |
| Calibration Date                     | 1/30/2001  | 1/30/2001    |
| Out of Cal Date                      | 7/29/2001  | 7/29/2001    |
| Serial Number                        | 61390      | 61390        |
| Source emission rate                 | 5.00%      | 1.00%        |
|                                      | N/A        | N/A          |
| High Voltage                         |            | KUL          |
| Battery Check                        | ok         | ØK           |
| Source Check Reading (1)             | 500        | 16,000       |
| Source Check Reading (2)             | 500        | 16,000       |
| Source Check Reading (3)             | 500        | 16,000       |
| Source Check Reading (4)             | 500        | 16,000       |
| Source Check Reading (5)             | 500        | 16,000 N     |
| Source Check Reading (AVERAGE)       | 500        | د دور کا     |
| Matorial                             |            | ELK          |
| Scan Background roading (only 1)     |            |              |
| Scan Background reading (only 1)     |            |              |
| Direct Background reading (1)        | 70         | 16,000 7     |
| Direct Background reading (2)        | 20         | 15,000 la    |
| Direct Background reading (3)        | 30         | 16,000       |
| Direct Background reading (4)        | 20         | 16,000       |
| Direct Background reading (5)        | 20         | 16,000       |
| Direct Background reading (AVERAGE)  | 22         | 14,000       |
| Efficiency (= (CPM-Background) / DPM |            |              |
| FLAG ( = 2X Background) SCANNING     | 4          | K            |
| FLAG ( = 2X Background) DIRECT       |            |              |
|                                      | 57.0       | 40-00        |
|                                      | 20         |              |
|                                      | 500        | 15 (10)      |
| EVENING BACKGROLIND READING          | 20         | 10000        |
| Morning check performed by           | 60° Sun Da | FUC          |
| Mid-day check performed by           | jR14 12007 | KIK          |
| Evening check performed by           | KAK        | 1            |

Ray 7.12.0,

#### 61320

#### Pancake G-M Serial Number 01405/01751 KIK

| DATE: 7/13/01                        |                       | PAGE OF 17 |
|--------------------------------------|-----------------------|------------|
| Source                               | Tc-99                 | Cs-137     |
| Source Type                          | Alpha                 | Gamma      |
| Calibration Date                     | 1/30/2001             | 1/30/2001  |
| Out of Cal Date                      | 7/29/2001             | 7/29/2001  |
| Serial Number                        | 61390                 | 61390      |
| Source emission rate                 | 5.00%                 | 1.00%      |
| Instrument Channel                   | N/A                   | N/A        |
| High Voltage                         | Kik                   | - KUK      |
| Battery Check                        | Ċις                   | øĸ         |
| Source Check Reading (1)             | 600                   | 15,000     |
| Source Check Reading (2)             | 500                   | 15,000     |
| Source Check Reading (3)             | 500                   | 15,000     |
| Source Check Reading (4)             | 500                   | 15,000     |
| Source Check Reading (5)             | 500                   | 15,000     |
| Source Check Reading (AVERAGE)       | 500 520               | 15,000     |
| Material:                            |                       | Maria      |
| Seen Background roading (only 1)     |                       | Sett.      |
| Scan Background reading (only 1)     |                       |            |
| Direct Background reading (1)        | 20                    | NA         |
| Direct Background reading (2)        | 20                    | NIA        |
| Direct Background reading (3)        | 20                    | NA         |
| Direct Background reading (4)        | 20                    | NA         |
| Direct Background reading (5)        | 20                    | NIA        |
| Direct Background reading (AVERAGE)  | 20                    |            |
| Efficiency (= (CPM-Background) / DPM | A                     |            |
| FLAG ( = 2X Background) SCANNING     | E                     | K          |
| FLAG ( = 2X Background) DIRECT       |                       |            |
|                                      | Ford                  |            |
| MID-DAY SOURCE READING               | 500                   | 19000      |
| MID-DAY BACKGROUND READING           | 10                    | NA         |
| EVENING SOURCE READING               | 200                   | 12000      |
| EVENING BACKGROUND READING           | 40                    | NA         |
| Morning check performed by KKS       | 68F, Party Cloudy, dy |            |
| Mid-day check performed by           | KUE 70°F              | - AK       |
| Evening check performed by           | JRN 735 75 P          |            |

#### SENECA ARMY DEPOT SEAD-12 RI/FS

#### 61390

### Pancake G-M Serial Number 61403/51751- KUK

| DATE: 7/14/01                        |                          | PAGE 10 OF 17 |
|--------------------------------------|--------------------------|---------------|
| Source                               | Tc-99                    | Cs-137        |
| Source Type                          | Alpha                    | Gamma         |
| Calibration Date                     | 1/30/2001                | 1/30/2001     |
| Out of Cal Date                      | 7/29/2001                | 7/29/2001     |
| Serial Number                        | 61390                    | 61390         |
| Source emission rate                 | 5.00%                    | 1.00%         |
| Instrument Channel                   | N/A                      | N/A           |
| High Voltage                         | HA                       | NA            |
| Battery Check                        | ok                       | OK            |
| Source Check Reading (1)             | 500                      | 15,000        |
| Source Check Reading (2)             | 600                      | 15,000        |
| Source Check Reading (3)             | 500                      | 15,000        |
| Source Check Reading (4)             | 600                      | 15,000        |
| Source Check Reading (5)             | 600                      | 15,000        |
| Source Check Reading (AVERAGE)       |                          | 15,000        |
| Material:                            |                          | KUM           |
| Scan Background reading (only 1)     |                          |               |
|                                      |                          |               |
| Direct Background reading (1)        | 20                       | NA            |
| Direct Background reading (2)        | 20                       | NA            |
| Direct Background reading (3)        | 20                       | NA            |
| Direct Background reading (4)        | 20                       | NA            |
| Direct Background reading (5)        | 20                       | NA            |
| Direct Background reading (AVERAGE)  | 20                       | NA            |
| Efficiency (= (CPM-Background) / DPM |                          |               |
| FLAG ( = 2X Background) SCANNING     | b                        | all           |
| FLAG ( = 2X Background) DIRECT       |                          |               |
| MID-DAY SOURCE READING               | 500                      | 15 000        |
|                                      | 20                       | NA            |
|                                      | 600                      | 14,500        |
| EVENING BACKGROUND READING           | 20                       | NA            |
| Morning check performed by           | KKS 0716 60° dout themil |               |
| Mid-day check performed by           | 1415 1148                | EUK           |
| Evening check performed by           | Juk 1700                 |               |

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#### SENECA ARMY DEPOT SEAD-12 RI/FS

#### 61390

#### Pancake G-M Serial Number-61403/51751 FUR

| DATE: 7/15/01                        |                                 | PAGE OF 17 |
|--------------------------------------|---------------------------------|------------|
| Source                               | Tc-99                           | Cs-137     |
| Source_Type                          | Alpha                           | Gamma      |
| Calibration Date                     | 1/30/2001                       | 1/30/2001  |
| Out of Cal Date                      | 7/29/2001                       | 7/29/2001  |
| Serial Number                        | 61390                           | 61390      |
| Source emission rate                 | 5.00%                           | 1.00%      |
| Instrument Channel                   | N/A                             | N/A        |
| High Voltage                         | ŅA                              | NA         |
| Battery Check                        | OK                              | NA         |
| Source Check Reading (1)             | 500                             | 15,000     |
| Source Check Reading (2)             | 500                             | :5,000     |
| Source Check Reading (3)             | 500                             | 15,000     |
| Source Check Reading (4)             | 500                             | 15,000     |
| Source Check Reading (5)             | 500                             | 15,000     |
| Source Check Reading (AVERAGE)       | 500                             | 15,000     |
| Matorial                             | Kul                             |            |
|                                      | - BLA                           |            |
| Scan Background reading (only 1)     |                                 |            |
| Direct Background reading (1)        | 20                              | NA         |
| Direct Background reading (2)        | 20                              | NA         |
| Direct Background reading (3)        | 20                              | NA         |
| Direct Background reading (4)        | 20                              | NA         |
| Direct Background reading (5)        | 20                              | NA         |
| Direct Background reading (AVERAGE)  | 20                              | NA         |
| Efficiency (= (CPM-Background) / DPM | ALA                             |            |
| FLAG ( = 2X Background) SCANNING     | KUK                             |            |
| FLAG (= 2X Background) DIRECT        |                                 |            |
|                                      |                                 |            |
| MID-DAY SOURCE READING               | 500                             | 1500       |
| MID-DAY BACKGROUND READING           | 20                              | NA         |
| EVENING SOURCE READING               | 500                             | 15000      |
| EVENING BACKGROUND READING           | 20                              | NA         |
| Morning check performed by           | KKS 0720 68, P. claudy, any Mod | Humding    |
| Mid-day check performed by           | AML 1200 70"F. Sung war         |            |
| Evening check performed by           | MUL 1570 11                     |            |

61390

Pancake G-M Serial Number 61403/51751 PM

| DATE: 7/16/01                        |                   | PAGE 12 OF 17 |
|--------------------------------------|-------------------|---------------|
| Source                               | Тс-99             | Cs-137        |
| Source Type                          | Alpha             | Gamma         |
| Calibration Date                     | 1/30/2001         | 1/30/2001     |
| Out of Cal Date                      | 7/29/2001         | 7/29/2001     |
| Serial Number                        | 61390             | 61390         |
| Source emission rate                 | 5.00%             | 1.00%         |
|                                      | N/A               | N/A           |
| High Voltage                         | NA                | NA            |
| Battery Check                        | OK                | OK            |
| Source Check Reading (1)             | 500               | 15,000        |
| Source Check Reading (2)             | 500               | 15,000        |
| Source Check Reading (3)             | 500               | 15,000        |
| Source Check Reading (4)             | 007               | 1 5,000       |
| Source Check Reading (5)             | 500               | 15,000        |
| Source Check Reading (AVERAGE)       | 500               | 15,000        |
| Material:                            |                   | Fill          |
| Scan Background reading (only 1)     |                   |               |
|                                      |                   |               |
| Direct Background reading (1)        | 20                | NA            |
| Direct Background reading (2)        | 20                | NA            |
| Direct Background reading (3)        | 30                | NA            |
| Direct Background reading (4)        | 30                | NA            |
| Direct Background reading (5)        | 30                | NA            |
| Direct Background reading (AVERAGE)  | 26                | NA            |
| Efficiency (= (CPM-Background) / DPM |                   | ieu.          |
| FLAG ( = 2X Background) SCANNING     |                   | - ME          |
| FLAG ( = 2X Background) DIRECT       |                   |               |
|                                      |                   |               |
| MID-DAY SOURCE READING               | 500               | 15,000        |
| MID-DAY BACKGROUND READING           | 30                | NA            |
| EVENING SOURCE READING               | 500               | i6,000        |
| EVENING BACKGROUND READING           | 30                | NA            |
| Morning check performed by           | KKS 0708 P.Cloud  | l. 70°        |
| Mid-day check performed by           | KKS 1200 P. Clark | y 75°         |
| Evening check performed by           | KKS 1735 P. Clark | 1 73°         |

(:
61390

# Pancake G-M Serial Number 61403/51751 KUK

| DATE: 2/17 01                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGE 3 OF 17 |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Source                               | Tc-99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Cs-137       |
| Source Type                          | Alpha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Gamma        |
| Calibration Date                     | 1/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1/30/2001    |
| Out of Cal Date                      | 7/29/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7/29/2001    |
| Serial Number                        | 61390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 61390        |
| Source emission rate                 | 5.00%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.00%        |
| Instrument Channel                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A          |
| High Voltage                         | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA           |
| Battery Check                        | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ok           |
| Source Check Reading (1)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15,000       |
| Source Check Reading (2)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15,000       |
| Source Check Reading (3)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15,000       |
| Source Check Reading (4)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15,000       |
| Source Check Reading (5)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15,000       |
| Source Check Reading (AVERAGE)       | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15,000       |
| Material:                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Ket In       |
| Scan Background reading (only 1)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | FUR          |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |
| Direct Background reading (1)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | too          |
| Direct Background reading (2)        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | itoo         |
| Direct Background reading (3)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 500          |
| Direct Background reading (4)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | sup KUK      |
| Direct Background reading (5)        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 500          |
| Direct Background reading (AVERAGE)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 500          |
| Efficiency (= (CPM_Background) / DPM |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |
| ELAG (= 2X Background) SCANNING      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Kik          |
| FLAG ( = 2X Background) DIRECT       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |
|                                      | the state of the s |              |
| MID-DAY SOURCE READING               | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 16,000       |
| MID-DAY BACKGROUND READING           | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA           |
| EVENING SOURCE READING               | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | E 15,000     |
| EVENING BACKGROUND READING           | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 15,00 Kus    |
| Morning check performed by           | 68°F, Rein                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| Mid-day check performed by RM        | 11:55a overcest 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Kik          |
| Evening check performed by (KKS 1718 | 23° Humrd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |

PARSONS ENGINEERING SCIENCE

| 6 | 13 | 9 | 0 |
|---|----|---|---|
| 6 | 3  | 7 | U |

# Pancake G-M Serial Number 61403/51751 KUL

| DATE: 718/01                        |                | PAGE 14 OF 17 |
|-------------------------------------|----------------|---------------|
| Source                              | Tc-99          | Cs-137        |
| Source:Type                         | Alpha          | Gamma         |
| Calibration Date                    | 1/30/2001      | 1/30/2001     |
| Out of Cal Date                     | 7/29/2001      | 7/29/2001     |
| Serial Number                       | 61390          | 61390         |
| Source emission rate                | 5.00%          | 1.00%         |
|                                     | IN/A           | N/A           |
| High Voltage                        | AM             | AVI           |
| Battery Check                       | OIL            | ok            |
| Source Check Reading (1)            | 500            | 16000         |
| Source Check Reading (2)            | 1000           | 15000         |
| Source Check Reading (3)            | 500            | 15000         |
| Source Check Reading (4)            | 500            | 16000         |
| Source Check Reading (5)            | 100            | 15000         |
| Source Check Reading (AVERAGE)      | 540            | 15400         |
| Material:                           |                | in the        |
| Scan Background reading (only 1)    |                |               |
|                                     |                |               |
| Direct Background reading (1)       | 20             |               |
| Direct Background reading (2)       | 30             |               |
| Direct Background reading (3)       | 30             | ty            |
| Direct Background reading (4)       | 20             |               |
| Direct Background reading (5)       | 30             |               |
| Direct Background reading (AVERAGE) | <b>\$</b> 26   |               |
|                                     |                |               |
|                                     | F              |               |
|                                     |                | 10            |
| FLAG ( = 2X Background) DIRECT      |                |               |
| MID-DAY SOURCE READING              | not used in AM | NA            |
| MID-DAY BACKGROUND READING          | NA             | NA            |
| EVENING SOURCE READING              | 500            | 16,000        |
| EVENING BACKGROUND READING          | 20             | NA            |
| Morning check performed by AML      | 3 forger 64°F  |               |
| Mid-day check performed by          |                | EKK           |
| Evening check performed by Rom      | Sunny 740;=    |               |

(-

61390 Pancake G-M Serial Number-61403/51751

| DATE: 7/25/91                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGEIS OF 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source                               | ⊬ Tc-99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Cs-137                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Type                          | Alpha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Gamma                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Calibration Date                     | 1/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Out of Cal Date                      | 7/29/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7/29/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Serial Number                        | 61390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 61390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source emission rate                 | 5.00%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.00%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                      | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| High Voltage                         | Rom St NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | AM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Battery Check                        | 0 k                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (1)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1.6,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Source Check Reading (2)             | 600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 16,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (3)             | 600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 16,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (4)             | 550                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 16,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (5)             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 16,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Source Check Reading (AVERAGE)       | 540                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 16,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Matarial                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Kill                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Scan Background reading (only 1)     | and the second s |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Direct Background reading (1)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (2)        | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (3)        | jo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (4)        | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (5)        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direct Background reading (AVERAGE)  | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Efficiency (= (CPM Background) / DPM |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ELAG (= 2X Background) SCANNING      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | KUK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ELAG ( = 2X Background) DIRECT       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | And the second s |
| MID-DAY SOURCE READING               | Notuseda                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MID-DAY BACKGROUND READING           | Rom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | EL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| EVENING SOURCE READING               | KU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 l                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| EVENING BACKGROUND READING           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Morning check performed by           | Rom 75° sunni, hund                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 7:30a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Mid-day check performed by           | Notused                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Evening check performed by           | NOT U SPO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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|             | 61390                         |
|-------------|-------------------------------|
| Pancake G-M | Serial Number 61403/51751 KUK |

| DATE: 7/27/01                        |                    | PAGE 6 OF 17 |
|--------------------------------------|--------------------|--------------|
| Source                               | Tc:99              | Cs-137       |
| Source Type                          | Alpha              | Gamma        |
| Calibration Date                     | 1/30/2001          | 1/30/2001    |
| Out of Cal Date                      | 7/29/2001          | 7/29/2001    |
| Serial Number                        | 61390              | 61390        |
| Source emission rate                 | 5.00%              | 1.00%        |
| Instrument Channel                   | N/A                | N/A          |
| High Voltage                         | NA                 | NA           |
| Battery Check                        | ok                 | OK           |
| Source Check Reading (1)             | 500                | (5,000       |
| Source Check Reading (2)             | 500                | 16,006       |
| Source Check Reading (3)             | 500                | 16,000       |
| Source Check Reading (4)             | 500                | 14,000       |
| Source Check Reading (5)             | 500                | 161000       |
| Source Check Reading (AVERAGE)       | 500                | 15,800       |
|                                      |                    |              |
| Material:                            |                    | KUK          |
| Scan Background reading (only 1)     |                    |              |
|                                      |                    |              |
| Direct Background reading (1)        | 20                 | NA           |
| Direct Background reading (2)        | 20                 | NA           |
| Direct Background reading (3)        | 20                 | INA          |
| Direct Background reading (4)        | 36                 | NA           |
| Direct Background reading (5)        | 30                 | NA           |
| Direct Background reading (AVERAGE)  | 24                 | NA           |
| Efficiency (= (CPM Background) / DPM |                    |              |
| ELAC ( = 2X Background) SCANNING     |                    | KUK          |
| FLAG ( = 2X Background) DIRECT       |                    |              |
| - LAG ( - 27 Background) DIRECT      |                    |              |
| MID-DAY SOURCE READING               | not used in AM     | HA           |
| MID-DAY BACKGROUND READING           | NA                 | NA           |
| EVENING SOURCE READING               | 500                | 16,000       |
| EVENING BACKGROUND READING           | 20                 |              |
| Morning check performed by           | Rom Sunny 71º 11:  | BO -         |
| Mid-day check performed by           | Initial check done | a atlunch    |
| Evening check performed by           | KICS 1608 740F     | NA           |

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PARSONS ENGINEERING SCIENCE

# 61320

# Pancake G-M Serial Number 81403/51751-KLK

| DATE: 7/29/01                       |                             | PAGE 17 OF 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source                              | Тс-99                       | Cs-137                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Type                         | Alpha                       | Gamma                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Calibration Date                    | 1/30/2001                   | 1/30/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Out of Cal Date                     | 7/29/2001                   | 7/29/2001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Serial Number                       | 61390                       | 61390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Instrument Channel                  | 5.00%                       | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                     |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| High Voltage                        | NA                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Battery Check                       | 014                         | OK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Source Check Reading (1)            | 052                         | ii cuu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (2)            | 200                         | 16,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (3)            | 550                         | 11.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (4)            | 500                         | 15,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source Check Reading (5)            | Γώ                          | 11. 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Source Check Reading (AVERAGE)      | 500                         | 16 000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Material:                           |                             | KIK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Scan Background reading (only 1)    |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                     |                             | And the second sec |
| Direct Background reading (1)       | 30                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Direct Background reading (2)       | 30                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Direct Background reading (3)       | 30                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Direct Background reading (4)       | 30                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Direct Background reading (5)       | 30                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Direct Background reading (AVERAGE) | 30                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Efficiency (= (CDM Restanced) ( DDM |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                     |                             | KLY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                     |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FLAG ( - 2A background) DIRECT      |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| MID-DAY SOURCE READING              | 500                         | 16,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| MID-DAY BACKGROUND READING          | 20                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| EVENING SOURCE READING              | 500                         | 15000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| EVENING BACKGROUND READING          | 30                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Morning check performed by          | KKS. 0724. 70° 7. Sung. dry | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Mid-day check performed by          | Ran 12:550 72° Sonny.       | ourreast                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Evening check performed by          | NA                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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# APPENDIX O

# INTERPRETATION OF GAMMA SPECTROSCOPY RESULTS

This appendix presents the methodology for the interpretation of the SEAD-12 gamma spectroscopy results. In-situ gamma spectroscopy was performed using a Universal Radiation Spectrum Analyzer (URSA). While the URSA software can readily identify radionuclides based on the gamma energies that are detected in the field, the identification may be complicated by the fact that radionuclides commonly share (or have similar) photon energies. As a result, the software may identify a number of radionuclides, both man-made and naturally-occurring, as being present in the source material, and the user is left to determine those that may actually be present. In order to differentiate between man-made or artificially enhanced radioactive materials and naturally-occurring radioactive materials, it is important to consider the following:

- Decay characteristics of man-made or artificially enhanced radioactive materials;
- Decay characteristics of naturally-occurring radioactive materials such as uranium and thorium, and their associated decay series;
- The variability of naturally-occurring radioactive materials in the environment; and,
- Other survey measurements that may provide additional evidence to support the identification of a particular radionuclide;
- The known history of the location of where the measurement was collected.

Sections O.1-O.3 provide background information on the radioactive materials that may influence the identification of radionuclides based on gamma spectroscopy. Sections O.4 and O.5 discuss the methodology and issues associated with the interpretation of spectroscopy results. Sections O.6 and O.7 address identification issues specific to the SEAD-12 gamma spectroscopy results.

# 0.1 MAN-MADE RADIOACTIVE MATERIALS

The primary man-made radionuclide of concern (ROC) at SEAD-12 is Pu-239. As it is primarily an alpha emitter, Pu-239 in small amounts is often difficult to directly detect in the field due to the limited range of alpha particles. However, the presence of Pu-239 associated with weapons grade plutonium is often indirectly determined by investigating the presence of Am-241. Am-241 is the decay product of Pu-241, which is present in small amounts in weapons grade plutonium. As it emits gamma radiation in addition to alpha particles, Am-241 is more readily detectable than Pu-239 under field conditions. Like several other transuranic radionuclides, Am-241 emits a photon at ~14 keV; however, it also emits a photon at 59.5 keV, which distinguishes it from other radionuclides. In addition, the Am-241 activity in a given amount of weapons grade plutonium

P \PIT\Projects\SENECA\S12RI\BLDGSURV\data\_report\Final (Phase I & II)\Appendix O\Appendix O doc

will begin to exceed that of Pu-239 within five years of processing because of the relatively short half-life of Pu-241.

Other gamma-emitting man-made ROCs at SEAD-12 include Co-57 (6.4 keV @ 50%, 122 keV @ 85%, and 136 keV @ 11%), Co-60 (1173 and 1333 keV @ 100%), and Cs-137/Ba-137m (32 keV @ 8%, 661 keV @ 90%). These radionuclides have photon emissions that are readily detectable and can be easily identified based on multiple photon energies.

#### 0.2 ARTIFICIALLY ENHANCED URANIUM

When uranium ore is refined, most of the decay products and naturally-occurring thorium that may be present are removed to produce a purified metal, which consists almost entirely of U-235, U-234, and U-238. The *short-term progeny* begins growing back in, and within a few months the Th-234, Pa-234m, and Pa-234 progeny of U-238 and the Th-231 progeny of U-235 will be back at equilibrium. However, the remainder of the progeny (i.e., the *long-term progeny*) will not be present in significant concentrations for hundreds to thousands of years. (This is not true of processed thorium metal, for which significant progeny will be present in only a few years.) As a result, the presence of artificially enhanced uranium can be determined by the presence or absence of these long-term progeny.

The refinement process results in enriched uranium and depleted uranium. Enriched uranium (EU) has increased U-235 and U-234 activity. The increased concentration of U-235 in the materials is typically expressed in the weight percent of U-235 and can vary widely based on the projected use of the material being produced. The enrichment of U-235 is the intent of the enrichment process. The U-234 activity in EU is increased more than the U-235 activity, although it remains an extremely small portion of the uranium mass, and can typically be ignored in most calculations of uranium mass. The activity in enriched uranium is discussed further in the Health Physics Manual of Good Practices for Uranium Facilities (EGG-2530). Depleted uranium (DU) is the waste product from the enrichment process. DU has reduced activity fractions for U-235 and U-234, and an increased activity fraction for U-238. DU may be present at various nuclear and military facilities since it is often used for shielding, shell casings, and counter weights.

When evaluating the potential presence of artificially enhanced uranium contamination, it is useful to consider both the relative U-238, U-235, and U-234 ratios and the relative parentprogeny ratios. The presence and activities of long-term progeny can be used to determine if a sample is distinguishable from ambient background data. The short-term progeny are helpful in estimating the activity of the parent radionuclide where the parent is difficult to measure directly. For example, short-lived Th-234, which is in equilibrium with U-238, emits several photons under 100 keV. Th-234 serves as an indicator for U-238, which is primarily an alpha emitter and

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does not have any distinguishing photon emissions. By examining the relative activities of the uranium isotopes (or the indicators when the uranium parent cannot easily be directly measured), the nature of the uranium present (enriched, depleted, or natural) can be determined. The activity concentrations (or lack thereof) of the long-term progeny can then be used to verify that determination.

# 0.3 NATURALLY-OCCURRING URANIUM AND THORIUM

U-238/U-235 and Th-232 are typically found together in nature. The ambient background radioactivities of building materials are typically related to the rock/soil type associated with the material. NCRP Report 94, "Exposure of the Population in the United States and Canada from Natural Background Radiation," provides an overview of natural radiation sources (NCRP, 1994). Typically Th-232 concentrations (i.e., radioactivity per gram of material) in natural materials are greater than or equal to U-238 concentrations. Natural materials that may have a higher U-238 activity include:

- carbonate based rocks,
- beach sand,
- quartz, and
- arkose.

There is significant variability in the uranium and thorium concentrations in rocks and soils and thus in building materials, as noted in NCRP Report 94. The values in that report are averages and the concentration varies widely so it is important to have local background data.

As shown in **Table O-1**, several radionuclides in the uranium and thorium natural decay series have similar gamma emission energies. As a result, the spectra obtained from these series will overlap significantly when using a NaI-based spectrometry system because of its low energy resolution. However, this overlap does not present a significant problem unless the combined uranium and thorium series background is naturally elevated and results in a low minimum detectable activity (MDA) for ROCs with low-energy gamma emissions.

**Table O-2** summarizes the peak identification for the SEAD-12 materials used for background subtraction, and provides an example of the variability observed in different background materials. Th-232 series decay products generally had higher activities than decay products associated with the U-238 or U-235 decay series. The background activities listed in **Table O-2** that exceed the DCGL<sub>W</sub>s demonstrate the variability that is present in background. The Am-241 identification of porcelain background is an example of a misidentification by the software and isdiscussed further in **Section O.7**. This type of misidentification is caused by the overlap of the

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gamma energy peaks associated with the U-238, U-235, and Th-232 decay series at both the 13 keVand 60 keV energy levels, which are also associated with Am-241.

# 0.4 ASSESSING THE POTENTIAL FOR IDENTIFIED SPECTRAL PEAKS BEING ASSOCIATED WITH AMBIENT BACKGROUND

During the identification process, a typical background spectrum is subtracted directly from the spectra for the material being evaluated. However, it is possible to obtain radiation peak identifications associated with natural background after the typical background spectrum has been subtracted. This is because of factors such as the variability of background, statistical variability associated with counting statistics, and variations in geometry and instrument efficiency.

An example of natural background identification is when gamma peaks associated with long-term uranium or thorium progeny are observed and there is no source of these specific materials at the site, except for the ambient background. The most common long-term progeny observed in a spectral analysis after background subtraction is Pb-210, which is not associated with artificially enhanced uranium sources. If the Pb-210 activity is elevated it is reasonable to assume that there may also be naturally elevated U-238/Th-234 activity.

When assessing the relative projected activity ratios (and thus the expected relative spectral peak identification data), it is important to recognize the impact of chemical properties such as material solubility and radon diffusion on the relative activity concentrations.

In a soil/ore body (i.e., any source of uranium and/or thorium) or in building materials containing natural radioactive sources, more soluble radionuclides may be transported by groundwater movement away from the parent radionuclides, altering the original activity ratios between parent and decay product. These altered activity ratios may cause the activity concentrations for the remaining, less-soluble radionuclides to appear elevated when in fact they are not, or they may cause a misidentification of what is actually a background material. The potential impact of migration may be addressed by reviewing the background data from similar materials to determine if activity ratios have been altered. Inside the majority of the SEAD-12 structures, the transport of more soluble radionuclides out of concrete and other building materials due to groundwater is not a concern because the structures are not subject to groundwater flow. Seasonal flooding was observed in the lower level of Building 812; however, the likelihood of a significant impact on the natural activity ratios in the building ratios is low.

When assessing the activity of progeny beyond radon, it is important to recognize that some fraction of the radon may escape into the air and then decay at a distant location. The relative fraction of radon escaping from a fine layer of dust on a building surface will be higher than the relative faction that escapes from a deep soil or concrete matrix. As a result, radon and its decay

products may have reduced activities relative to the parent due to the diffusion of radon from the matrix for materials with high surface to mass ratios. This concern is most applicable to the radon isotope (Rn-222) and the decay products that are associated with U-238 series. The radon isotopes associated with the two other natural decay chains (Rn-219 in the U-235 series and Rn-220 in the Th-232 series) have relatively short half-lives (i.e., 3.96 and 55.6 seconds, respectively), reducing the potential for diffusion.

# 0.5 RADIONUCLIDE IDENTIFICATION

In order to improve the resolution on the peaks of interest, sample spectra were analyzed by the URSA software after background was subtracted. Where multiple background files were applicable to the sample, the sample spectrum was analyzed with each and the results were used to select the most appropriate background. The process of background subtraction is displayed graphically in **Figures O-4** to **O-7**. The first spectrum, **Figure O-4**, is the original spectrum collected in the field with the URSA system (in this case, sample 14 at Building. 804, Room 1, grid 13). **Figure O-5** is the representative background spectrum for cinder block, the material present at the sampling location. **Figure O-6** displays the sample spectrum after background subtraction, and **Figure O-7** displays the peaks that are identified by the URSA software.

The final identification of energy peaks, based on the radionuclides tentatively identified by the URSA software, was completed using a weight-of-evidence approach. The additional factors assessed were:

- The appropriate relative fraction of the peak assigned to each identification based on the confirmatory peaks;
- The known relative ratios of radionuclides based on known relationships, such as progeny or natural relative isotopic ratios;
- The known relative ratios of radionuclides based on the ingrowth (e.g., the ingrowth of Am-241 in weapons grade plutonium) of radionuclides; and,
- The likelihood of the material being present (based on historical information, other survey results, etc).

Where there were multiple identifications of peaks that could not be resolved based on other data, it became necessary to assume different alternatives for the identification, and then determine the limiting, or worst-case scenario. The worst-case radionuclide was then used in subsequent analysis.

Refer to Appendix L (Procedure GD-MCA-R-001) for specific information and procedures for using the URSA gamma spectroscopy system.

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#### 0.6 SPECIFIC IDENTIFICATIONS

**Table O-3** provides a summary of the gamma spectroscopy data for samples potentially having activity concentrations elevated above the  $DCGL_ws$  (also refer to **Tables 4-25**, **4-26**, and **5-5**). In addition, **Table O-3** also presents the data for the samples from survey areas that had potentially elevated data identified during the Phase I or II surveys. Spectroscopy data for samples where only energy peaks of long-term progeny of naturally-occurring radionuclides were identified are not included in **Table O-3**.

**Table O-3** presents the basis for radionuclide identification and conclusions on the sample based on that identification. Bolded results indicate radionuclides that appear to exceed the DCGL<sub>W</sub> values and require further action (e.g., additional evaluations or remediation). The applicable smoothing factor (i.e., number of points used in assessing if a result is a peak, as discussed in **Appendix L**) and the type of peak identification analysis used by the software are listed for each analysis. The criteria for identifying peaks using the full-width half-maximum (FWHM) analysis is that the FWHM must be less 10% for the primary peak and 20% for the confirmatory peak for an identification to be valid. The "Analysis Notes" listed in the last column of **Table O-3** are discussed in **Section O.7**.

A limited number of the locations exceed the DCGL<sub>ws</sub> for the survey areas based on the gamma spectroscopy data and they are marked in bold in **Table O-3** and summarized below:

- Building 804, room 1, grid 13, location c10 (sample number 14)
  - This measurement, which was located on a cinder block wall, indicated the presence of localized contamination in excess of the U-235 DCGL<sub>w</sub>. However, this activity does not exceed the DCGL<sub>EMC</sub> of 233 dpm/100cm<sup>2</sup> for U-235. In addition, direct alpha and beta measurements for the survey area are within DCGL<sub>w</sub>; and there are no scanning exceedences associated with the survey area. This evidence suggests that the elevated U-235 activity is naturally-occurring.
- Building 819, room 12, grid 23, location c28 (sample number 67)

This measurement, which is located on a cinder block wall, indicated the presence of localized contamination in excess of the U-235 and Ra-226 DCGL<sub>W</sub>. As discussed in Note 5 below, this activity may be associated with other radionuclides and part of the ambient natural background. Although the Ra-226 measurement is greater than both the DCGL<sub>W</sub> and DCGL<sub>EMC</sub> of 2080 dpm/100cm<sup>2</sup>, direct alpha measurements for the room do not exceed the DCGL<sub>W</sub>s. The presence of another member of the U-238 decay chain (Pb-214) suggests that the elevated Ra-226 activity is naturally-occurring. Although the U-235 measurement is greater than both the DCGL<sub>EMC</sub> of 233 dpm/100cm<sup>2</sup>, direct alpha measurements for the room do not

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exceed the  $DCGL_{WS}$ . The presence of another member of the U-235 decay chain (Bi-211) suggests that the elevated U-235 activity is naturally-occurring.

- Building 819, room 5, grid 11, location c13 (sample number 82)
  - This measurement, which is located on a wood surface over a cinder block wall, indicated the presence of localized contamination in excess of the Ra-226 DCGL<sub>w</sub>. This activity does not exceed the DCGL<sub>EMC</sub> of 2080 dpm/100 cm<sup>2</sup> for Ra-226. In addition, direct alpha measurements for the survey area are within background, direct beta measurements are within DCGL<sub>w</sub>s, and there are no scanning exceedences associated with the survey area. This evidence suggests that the elevated Ra-226 activity is naturally-occurring or, as discussed in Note 5 below, is likely to be associated with other radionuclides and part of the ambient natural background.
- Building 819, room 5, grid 12, location c14 (sample location 83)

This measurement, which is located on a wood surface over a cinder block wall, indicated the presence of localized contamination in excess of the Ra-226 DCGL<sub>w</sub>. This measured activity, 1764 dpm/100 cm<sup>2</sup>, does not exceed the DCGL<sub>EMC</sub> of 2080 dpm/100 cm<sup>2</sup> for Ra-226. In addition, direct alpha measurements for the survey area are within background, direct beta measurements are within DCGL<sub>w</sub>s, and there are no scanning exceedences associated with the survey area. In addition, other members of the U-238 decay chain (Pb-214, Pb-210) have been identified. This evidence suggests that the elevated Ra-226 activity is naturally-occurring, or, as discussed in Note 5 below, this activity is associated with other radionuclides and part of the ambient natural background.

The spectra identified in **Table O-3** that are not specifically addressed above appear to be part of ambient background and/or below the DCGL<sub>ws</sub> based on the analysis. These peaks simply demonstrate the variability of natural background and do not represent activity in excess of the DCGL<sub>w</sub>.

The peaks that are part of natural background include various misidentifications associated with Pu-239 (Samples 30, 59, 65, 70, 83, 92, and 102) and Am-241 (Samples 70, 71, and 102). The absence of energy peaks associated with Am-241 for all the Pu-239 identifications (except in Samples 70 and 102) confirms that the identification of Pu-239 in those samples is not correct. It is important to recognize that Sample 102 is a background sample from Building 2104, where no contamination would have been present. It is likely that the peaks that are identified as being associated with Am-241 and Pu-239 are in fact associated with naturally-occurring radionuclides. In addition, the alpha and beta survey data collected at Sample 70 are not indicative of contamination as they do not exceed typical background levels. Analysis Notes 4 and 6 further address the potential identification of these peaks associated with Pu-239 or Am-241.

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#### 0.7 RADIONUCLIDE IDENTIFICATION ANALYSIS NOTES

The "Analysis Notes" in **Table O-3** (1 through 6) correspond to the following respective notes below. The notes are associated with the spectroscopy samples that required interpretation of the energy peaks (i.e., peaks with several possible identifications). The notes are as follows:

# Note 1. U-238 Series Progeny

Th-234 (half-life of 24.1 days) is a short-lived direct decay product of U-238. As the two radionuclides are in secular equilibrium, the Th-234 activity can be used to determine the U-238 activity. The variability of natural background in materials (e.g., concrete, cinder block, porcelain) can be significant and the background that is subtracted from the sample spectra is only an approximation of the ambient background. The primary method to determine if a U-238/Th-234 energy peak is the result of a natural background source or an artificially enhanced uranium source is to examine the presence or absence of natural decay products. As discussed in **Section O.2**, Ra-226 and subsequent decay products are removed from a U-238 source during the refinement process, and would not be present in significant amounts in an instance of artificially enhanced U-238 contamination. An indicator that shows that the U-238/Th-234 energy peak is associated with natural background is the presence of U-238 series decay products at similar activities beyond Ra-226. Typically Pb-210 is one of the more easily identified peaks and is generally greater than or similar to the activity of any identified Th-234 peaks.

There can be some variability in the relative activities of the natural decay products as a result of differences in radium, thorium, and uranium solubility, and the escape of radon. It is important to note that this type of variability may be seen in decay products of all of the natural decay series, regardless of sample material type.

#### Note 2. Th-232 Series Progeny

The presence of elevated Th-232 progeny (e.g., Tl-208) indicates that the elevated Th-232 series is most likely part of natural background. Since the Th-232 decay product Th-228 emits photons in the 84 keV range, an overestimate of the Th-234 (which emits photons at  $\sim$  92 keV) activity concentration may occur as a result of the overlap of the two natural sources. Th-232 is present in ambient background typically at activities greater than U-238 in granite-based soils and at least at the same level for most soils and rock matrices. This material appears consistent with natural background.

The U-238 progeny may not have been identified in this case because of interferences, statistical variability, and the potential that these activities have been lowered by the escape of the radon from near surface materials.

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# Note 3. U-235 Series Progeny

Another method used to determine if a U-238 identification was the result of a natural or artificially enhanced uranium source was to examine the decay products in the U-235 decay chain beyond Pa-231. U-235 activity in a natural source is about 4.5% of the U-238 activity. An artificially enhanced uranium source would not have significant amounts of the decay products associated with the U-235 decay chain.

# Note 4. Pu-239

The identification of Pu-239 by the URSA software is incorrect, as verified by the relative lack of Am-241 in the samples. If Pu-239 were present, Am-241 would be present at a higher activity than was observed in the sample based on the relatively short half-life of the Pu-241 parent and when weapons material would have been stored on base. In addition, the low-energy peak observed at ~13 keV, identified as Pu-239, is common with several naturally-occurring radionuclides, including U-238, U-235, and Th-232. Likewise, the ~60 keV energy peak, identified as Am-241, is also associated with the naturally-occurring radionuclides Pa-234 and Th-234.

# Note 5. Ra-226

Although an elevated level of Ra-226 was identified in these samples, it is likely that this result is indicative of the variability in natural background rather than a source of contamination. The Ra-226 measurements are is below the DCGL<sub>EMC</sub> of 2080 dpm/100 cm<sup>2</sup> for Ra-226. In addition, direct alpha measurements for the survey area are within background, direct beta measurements are within DCGL<sub>w</sub>s, and there are no scanning exceedences associated with the survey area. This evidence suggests that the elevated Ra-226 activity is naturally-occurring.

It is also possible that a portion of the activity identified as Ra-226 is associated with U-235, which produces a gamma at ~186 keV. U-235 emits this photon about 50% of the time and Ra-226 about 3% so there is an amplification of the projected count rate by a factor of at least 10 when it is interpreted as Ra-226 rather than U-235. Consequently, U-235 energy peaks may be mistaken as Ra-226.

#### Note 6. Am-241

It has been determined that the presence of Am-241 has been misidentified based on the identification of Pb-210, Th-234, and U-238. The identification of these radionuclides indicates the presence of the naturally-occurring U-238 decay chain. As such, the  $\sim$ 60 keV peak identified with Am-241 is likely associated with naturally-occurring Th-234, which has a 63 keV (3.5%)

confirmation peak. The U-238 activity appears to be consistent with natural background, per Analysis Notes 1, 2, and 3. It should also be noted that this sample is from a background building where weapons-related contamination is not expected and not probable.

### REFERENCES

- ICRP Publication 38, Radionuclide Transformations: Energy and Intensity of Emissions. Annals of the ICRP Vol. 11-13, 1983.
- NCRP Report No. 94, Exposure of the Population in the United States and Canada from Natural Background Radiation, 1988.
- NCRP Report No. 93, Ionizing Radiation Exposure of the Population of the United States, 1987.
- Health Physics Manual of Good Practices for Uranium Facilities, DE88-013620, U.S. DOE, June 1988.

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Figure O-1 U-238 Serial Decay



Figure O-2 U-235 Serial Decay



Figure O-3 Th-232 Serial Decay


Figure O-4 - Raw Spectrum Bldg. 804. Rm. 1 (Location 14)













#### Table O-1 Naturally-Occurring Radionuclides SEAD-12 Building Report Seneca Army Depot Activity

|              |            |                                                                    | Ganima/ X-Ray              |
|--------------|------------|--------------------------------------------------------------------|----------------------------|
| Kadionuclide | Farent     | Source                                                             | Emission Energies<br>(MeV) |
| Th-232       | primordial | natural (activity is typically 1 to<br>4 times the U-238 activity) |                            |
| Ra-228       | Th-232     | Th-232                                                             |                            |
| Ac-228       | Ra-228     | Th-232                                                             | 0.34 - 0.96                |
| Th-228       | Ac-228     | Th-232                                                             | 0.08                       |
| Ra-224       | Th-228     | Th-232                                                             | 0.24                       |
| Rn-220 (gas) | Ra-224     | Th-232                                                             |                            |
| Po-218       | Rn-220     | Th-232                                                             |                            |
| Pb-212       | Po-218     | Th-232                                                             | 0.24 - 0.3                 |
| Bi-212       | Pb-212     | Th-232                                                             | 0.04 - 1.7                 |
| Po-212       | Bi-212     | Th-232                                                             |                            |
| T1-208       | Bi-212     | Th-232                                                             | .5 – 2.6                   |
| U-235        | primordial | natural (in natural uranium about<br>4.5% to 5% of U-238 activity) | ▶ 0.14 - 0.2               |
| Th-231       | U-235      | U-235                                                              | 0.03 - 0.08                |
| Pa-231       | Th-231     | U-235                                                              | 0.02 -0.08                 |
| Ac-227       | Pa-231     | U-235                                                              | 0.02 - 0.09                |
| Th-227       | Ac-227     | U-235                                                              | 0.05 - 0.31                |
| Fr-223       | Ac-227     | U-235                                                              | 0.05 - 0.24                |
| Ra-223       | Th-227/    | U-235                                                              | 1.5 - 0.33                 |
|              | Fr-223     |                                                                    |                            |
| Rn-219 (gas) | Ra-223     | U-235                                                              | 0.27 - 0.4                 |
| Po-215       | Rn-219     | U-235                                                              |                            |
| Pb-211       | Po-215     | U-235                                                              | 0.410 - 0.83               |
| At-215       | Po-215     | U-235                                                              |                            |
| Bi-211       | Pb-211/    | U-235                                                              | 0.35                       |
|              | At-215     |                                                                    |                            |
| Po-211       | Bi-211     | U-235                                                              | 0.57 - 0.9                 |
| T1-207       | Bi-211     | U-235                                                              |                            |
| 11-238       | primordial | natural                                                            |                            |
| Th-234       | II-238     | 11-238                                                             | 0.063.0.093                |
| Pa-234m      | Th-234     | U-238                                                              | 0.765(0.3%), 1.00          |
| U-234        | Pa-234m    | U-238                                                              | 0.053 (0.2%)               |
| Th-230       | U-234      | U-238                                                              | 0.068(0.6%)                |
| Ra-226       | Th-230     | U-238                                                              | 0.186                      |
| Rn-222 (gas) | Ra-226     | U-238                                                              |                            |
| Po-210       | Rn-222     | U-238                                                              |                            |
| Pb-214       | Po-210     | U-238                                                              | 0.295 0.352                |
| Bi-214       | Ph-214     | U-238                                                              | 0 609 1 12 1 76            |
| Po-214       | Ri-214     | 11-238                                                             | 0.007, 1.12, 1.70          |
| Ph-210       | Bi-214     | U-230                                                              | 0.047                      |
|              | DI-214     | U-230                                                              | 0.047                      |
| DI-210       | D: 210     | U=230                                                              |                            |
| P0-210       | BI-210     | U-238                                                              |                            |

### Table O-2 Background Materials Peak Identification SEAD-12 Building Report Seneca Army Depot Activity

| Background<br>Number | Sample Material | Radionuclides<br>Identified | Peak<br>Energy<br>(keV) | 2nd Peak<br>Energy (keV) | Upper Bound Peak<br>Activity (dpm/100 cm <sup>2</sup> ) | DCGL <sub>w</sub> (dpm/100<br>cm <sup>2</sup> ) |
|----------------------|-----------------|-----------------------------|-------------------------|--------------------------|---------------------------------------------------------|-------------------------------------------------|
| 1                    | Cinder Block    | Pb-210                      | 46.15                   |                          | 2155                                                    | NA                                              |
|                      |                 | U-235                       | 185.2                   | 96.93                    | 115                                                     | 145                                             |
| 2                    | Ceramic Block   | Th-228                      | 81.11                   |                          | 4038                                                    | NA                                              |
|                      |                 | Ra-223                      | 81.11                   | 269.5                    | 123                                                     | NA                                              |
| 3                    | Concrete Floor  | U-235                       | 185.4                   | 96.93                    | 124                                                     | 145                                             |
|                      |                 | Th-228                      | 85.62                   |                          | 2049                                                    | NA                                              |
|                      |                 | Pb-210                      | 49.5                    |                          | 669                                                     | NA                                              |
| 4                    | Metal Floor     | Th-234                      | 92.14                   | 63.29                    | 251                                                     | 152                                             |
| 5                    | Porcelain       | U-235                       | 186.7                   | 96.93                    | 162                                                     | 145                                             |
|                      |                 | Am-241                      | 55.65                   | 13.9                     | 92                                                      | 40                                              |
|                      |                 | Th-234                      | 93.15                   | 63.29                    | 165                                                     | 152                                             |
| 6                    | Wood            | Pb-210                      | 50.41                   |                          | 849                                                     | NA                                              |

 Table O-3

 Summary of Gamma Spectroscopy and Radionuclide Identification Results

 SEAD-12 Building Report

 Seneca Army Depot Activity

| Sample<br>Number | Spectra Filename             | Sample<br>Material | Smoothing .<br>Factor | Radionuolides .<br>Identified | Peak<br>Activity<br>(dpm) | ID Type<br>(Energy of<br>FWHM) | Peak<br>Energy<br>(keV) | Confirmatory Peak<br>Energy (Ref.) | Peak Activity<br>(dpm/100icm <sup>*</sup> )* | Decay Serles       | Upper Bound Peak<br>Activity (dpm/100 cm <sup>3</sup> ) | pcci.,            | Upper<br>Bound<br>Exceeds<br>Surficial<br>DCGL? | Analysis<br>Notes |
|------------------|------------------------------|--------------------|-----------------------|-------------------------------|---------------------------|--------------------------------|-------------------------|------------------------------------|----------------------------------------------|--------------------|---------------------------------------------------------|-------------------|-------------------------------------------------|-------------------|
| 14               | 804-1-C10.usf                | aindar block       | 36                    | Pb-210                        | 788                       | E +/- 6 keV                    | 46.58                   |                                    | 622                                          | Uranium            | 933                                                     | No DCGL           | NA 8/                                           |                   |
|                  | 10.1                         | citider block      | 36                    | Pb-210                        | 117                       | E +/- 6 keV                    | 51.51                   |                                    | 92                                           | Uranium            | 139                                                     | No DCGL           | NA                                              |                   |
|                  | 45 minute count time         |                    | 36                    | Pb-210                        | 847                       | FWHM                           | 43.72                   |                                    | 669                                          | Uranium            | 1003                                                    | No DCGL           | NA                                              |                   |
|                  |                              |                    | 36                    | Pb-210                        | 788                       | FWHM                           | 46.58                   |                                    | 622                                          | Uranium            | 933                                                     | No DCGL           | NA                                              |                   |
|                  |                              |                    | 36                    | U-235                         | 185                       | FWHM                           | 187.9                   | 96.93                              | 146                                          | Actinium           | 219                                                     | 145               | Y                                               |                   |
|                  |                              |                    | 24                    | Pb-210                        | 1420                      | E +/- 6 keV                    | 43.96                   |                                    | 1121                                         | Uranium            | 1681                                                    | No DCGL           | NA                                              |                   |
|                  |                              |                    | 24                    | Pb-210                        | 1250                      | E +/- 6 keV                    | 46.76                   |                                    | 987                                          | Uranium            | 1480                                                    | No DCGL           | NA                                              |                   |
|                  |                              |                    | 24                    | Pb-210                        | 1010                      | E +/- 6 keV                    | 50.72                   |                                    | 797                                          | Uranium            | 1196                                                    | No DCGL           | NA                                              |                   |
|                  |                              |                    | 24                    | U-235                         | 81                        | E +/- 6 keV                    | 185.9                   | 96.93                              | 64                                           | Actinium           | 96                                                      | 145               | N                                               |                   |
|                  |                              |                    | 24                    | Pb-210                        | 1250                      | FWHM                           | 46.76                   |                                    | 987                                          | Uranium            | 1480                                                    | No DCGL           | NA                                              |                   |
|                  |                              |                    | 16                    | Pb-210                        | 1720                      | E +/- 6 keV                    | 43.78                   |                                    | 1358                                         | Uranium            | 2037                                                    | No DCGL           | NA                                              |                   |
|                  |                              |                    | 16                    | Pb-210                        | 1450                      | E +/- 6 keV                    | 46.95                   |                                    | 1145                                         | Uranium            | 1717                                                    | No DCGL           | NA                                              |                   |
|                  |                              |                    | 16                    | Pb-210                        | 1020                      | E +/- 6 keV                    | 50.9                    |                                    | 805                                          | Uranium            | 1208                                                    | No DCGL           | NA                                              |                   |
|                  |                              |                    | 16                    | Pb-210                        | 1450                      | FWHM                           | 46.95                   |                                    | 1145                                         | Uranium            | 1717                                                    | No DCGL           | NA                                              |                   |
| 17               | 804-2-C6.usf                 | glass              | 36                    | Pb-210                        | 561                       | E +/- 6 keV                    | 51.14                   |                                    | 443                                          | Uranium            | 664                                                     | No DCGL           | NA                                              |                   |
|                  |                              | Brass              | 24                    | Pb-210                        | 775                       | E +/- 6 keV                    | 50.96                   |                                    | 612                                          | Uranium            | 918                                                     | No DCGL           | NA                                              |                   |
|                  | 60 minute count time         |                    | 24                    | Th-234                        | 717                       | E +/- 6 keV                    | 96.16                   | 63.29                              | 566                                          | Uranium            | 849                                                     | 152               | Y                                               | 1                 |
|                  |                              |                    | 24                    | U-235                         | 68                        | E +/- 6 keV                    | 190                     | 96.93                              | 54                                           | Actinium           | 81                                                      | 145               | N                                               |                   |
|                  |                              |                    | 24                    | Th-234                        | 717                       | FWHM                           | 96.16                   | 63.29                              | 566                                          | Uranium            | 849                                                     | 152               | Y                                               | I                 |
|                  |                              |                    | 16                    | Pb-210                        | 404                       | E +/- 6 keV                    | 50.53                   |                                    | 319                                          | Uranium            | 478                                                     | No DCGL           | NA                                              |                   |
|                  |                              |                    | 16                    | Th-234                        | 708                       | E +/- 6 keV                    | 97.16                   | 63.29                              | 559                                          | Uranium            | 838                                                     | 152               | Y                                               | 1                 |
|                  |                              |                    | 16                    | U-235                         | 57                        | E +/- 6 keV                    | 189.2                   | 96.93                              | 45                                           | Actinium           | 67                                                      | 145               | N                                               |                   |
|                  |                              |                    | 16                    | Th-234                        | 708                       | FWHM                           | 97.16                   | 63.29                              | 559                                          | Uranium            | 838                                                     | 152               | Y                                               |                   |
| Conclusion       | is that this spectrum is rep | presentative of b  | ackground with :      | some elevated natura          | ally occurring            | materials, based               | i on note 1.            | The maximum numbe                  | r of counts collect                          | ed at a single ene | rgy after background subtrac                            | tion was 100 (1.7 | cpm).                                           |                   |
| 18               | 804-3a-C1.ust                | floor the w/       | 24                    | Th-234                        | 449                       | E +/- 6 keV                    | 94.65                   | 63.29                              | 354                                          | Uranium            | 532                                                     | 152               | NA                                              |                   |
|                  | 60 minute count time         | concrete base      | 24                    | Th-234                        | 449                       | FWHM                           | 94.65                   | 63.29                              | 354                                          | Uranium            | 532                                                     | 152               | NA                                              |                   |
|                  |                              |                    | 16                    | Pu-239                        | 901                       | E +/- 6 keV                    | 16.87                   |                                    | 711                                          | weapons PU         | 1067                                                    | 41                | NA                                              |                   |
|                  |                              |                    | 16                    | 0-233                         | 1020                      | E +/- 6 KeV                    | 16.87                   |                                    | 805                                          | Uranium            | 1208                                                    | NO DEGL           | NA                                              |                   |
|                  |                              |                    | 16                    | U-238                         | 451                       | E +/- 6 keV                    | 16.87                   | 10.0                               | 356                                          | Uranium            | 534                                                     | 152               | NA                                              |                   |
|                  |                              |                    | 10                    | Am-241                        | 103                       | E +/- 6 KeV                    | 57.59                   | 13.9                               | 81                                           | weapons PU         | 122                                                     | 40                | NA                                              |                   |
|                  |                              |                    | 16                    | TI-208                        | 515                       | E +/- 6 keV                    | 70.07                   | 277.4                              | 407                                          | Thorium            | 610                                                     | NO DCGL           | NA                                              | 2                 |
|                  |                              |                    | 16                    | Th-234                        | 562                       | E +/- 6 keV                    | 95.65                   | 63.29                              | 444                                          | Uranium            | 600                                                     | 152               | Y                                               | 2                 |
|                  |                              |                    | 16                    | 77 774                        | 567                       | 1.11/118/                      | 0565                    | 67 70                              |                                              | 1 0 0 0 11 100     | 665                                                     | 157               | N N                                             | .,                |

# Table O-3 Summary of Gamma Spectroscopy and Radionuclide Identification Results SEAD-12 Building Report Seneca Army Depot Activity

| Sample <sup>'</sup><br>Number                  | Specira Filename                                                                 | Sample<br>Material-                                         | Smoothing .<br>Factor                                 | Radionicilides<br>Identified                                         | Pealo<br>Activity<br>(dpm).**                              | ID Type<br>(Energy or<br>FWHM)                          | Peak<br>Energy<br>(keV)                    | Confirmationy Peak<br>Energy (keV)                                           | Feak Activity<br>(dpm/100 cm <sup>2</sup> ) <sup>40</sup> | Decay Series                          | Upper Bound Peak<br>Activity (dpm/100 cm <sup>2</sup> )      | DCGLw <sup>a</sup>                    | Upper<br>Bound<br>Exceeds<br>Surficial<br>DCGL? | Analysis<br>Notes <sup>b'</sup> |
|------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------|--------------------------------------------------------------|---------------------------------------|-------------------------------------------------|---------------------------------|
| 22                                             | 804-5A-C5.usf                                                                    | cinder block                                                | 24                                                    | Ra-223                                                               | 96                                                         | E +/- 6 keV                                             | 82.86                                      | 269.5                                                                        | 76                                                        | Actinium                              | 114                                                          | No DCGL                               | NA                                              |                                 |
|                                                | (0 - i                                                                           |                                                             | 24                                                    | Th-228                                                               | 3130                                                       | E +/- 6 keV                                             | 82.86                                      |                                                                              | 2471                                                      | Thorium                               | 3706                                                         | No DCGL                               | NA                                              |                                 |
|                                                | ou minute count time                                                             |                                                             | 24                                                    | Th-234                                                               | 770                                                        | E +/- 6 keV                                             | 95.65                                      | 63.29                                                                        | 608                                                       | Uranium                               | 912                                                          | 152                                   | Y                                               | 1, 2, & 3                       |
|                                                |                                                                                  |                                                             | 24                                                    | Ra-223                                                               | 96                                                         | FWHM                                                    | 82.86                                      | 269.5                                                                        | 76                                                        | Actinium                              | 114                                                          | No DCGL                               | NA                                              |                                 |
|                                                |                                                                                  |                                                             | 24                                                    | Th-228                                                               | 3130                                                       | FWHM                                                    | 82.86                                      |                                                                              | 2471                                                      | Thorium                               | 3706                                                         | No DCGL                               | NA                                              |                                 |
|                                                |                                                                                  |                                                             | 24                                                    | Th-234                                                               | 770                                                        | FWHM                                                    | 95.65                                      | 63.29                                                                        | 608                                                       | Uranium                               | 912                                                          | 152                                   | Y                                               | 1, 2, & 3                       |
|                                                |                                                                                  |                                                             | 16                                                    | Pb-210                                                               | 847                                                        | E +/- 6 keV                                             | 52.36                                      |                                                                              | 669                                                       | Uranium                               | 1003                                                         | No DCGL                               | NA                                              |                                 |
|                                                |                                                                                  |                                                             | 16                                                    | Th-234                                                               | 1003                                                       | E +/- 6 keV                                             | 96.66                                      | 63.29                                                                        | 792                                                       | Uranium                               | 1188                                                         | 152                                   | Y                                               | 1, 2, & 3                       |
|                                                |                                                                                  |                                                             | 16                                                    | U-235                                                                | 30                                                         | E +/- 6 keV                                             | 179.9                                      | 96.93                                                                        | 24                                                        | Actinium                              | 36                                                           | 145                                   | N                                               |                                 |
|                                                |                                                                                  |                                                             | 16                                                    | Th-228                                                               | 4140                                                       | FWHM                                                    | 83.62                                      |                                                                              | 3268                                                      | Thorium                               | 4902                                                         | No DCGL                               | NA                                              |                                 |
| Conclusion is                                  | s that this spectrum is rep                                                      | presentative of ba                                          | ackground with se                                     | ome elevated natural                                                 | y occurring r                                              | naterials, based                                        | on Notes 1                                 | , 2, and 3. The maxim                                                        | um number of cou                                          | nts collected at a :                  | single energy after backgrou                                 | nd subtraction wa                     | as 160 (2.7 cpn                                 | n).                             |
| 27                                             | 805-1-C4.usf                                                                     | concrete                                                    | 24                                                    | Pb-210                                                               | 1200                                                       | E +/- 6 keV                                             | 44.02                                      |                                                                              | 947                                                       | Uranium                               | 1421                                                         | No DCGL                               | NA                                              |                                 |
|                                                | 15                                                                               |                                                             | 24                                                    | Pb-210                                                               | 1600                                                       | E +/- 6 keV                                             | 44.02                                      |                                                                              | 1263                                                      | Uranium                               | 1895                                                         | No DCGL                               | NA                                              |                                 |
| 12 million - 1                                 | 45 minute count time                                                             |                                                             | 24                                                    | Th-228                                                               | 376                                                        | E +/- 6 keV                                             | 79.1                                       |                                                                              | 297                                                       | Thorium                               | 445                                                          | No DCGL                               | NA                                              |                                 |
|                                                |                                                                                  |                                                             | 24                                                    | Th-234                                                               | 559                                                        | E +/- 6 keV                                             | 95.91                                      | 63.29                                                                        | 44 I                                                      | Uranium                               | 662                                                          | 152                                   | Y                                               | 1 & 2                           |
| Conclusion is                                  | s that this spectrum is re                                                       | presentative of ba                                          | ackground with se                                     | ome elevated natural                                                 | y occurring r                                              | naterials, based                                        | on Notes 1                                 | and 2. The maximum                                                           | number of counts                                          | collected at a sing                   | gle energy after background                                  | subtraction was 2                     | 220 (4.9 cpm).                                  |                                 |
| 29                                             | 805-1-C6.usf                                                                     | concrete                                                    | 16                                                    | Th-228                                                               | 4010                                                       | E +/- 6 keV                                             | 79.85                                      |                                                                              | 3166                                                      | Thorium                               | 4748                                                         | No DCGL                               | NA                                              |                                 |
| 0                                              | 45 minute count time                                                             |                                                             | 16                                                    | Th-228                                                               | 5410                                                       | E +/- 6 keV                                             | 80.36                                      |                                                                              | 4271                                                      | Thorium                               | 6406                                                         | No DCGL                               | NA                                              |                                 |
|                                                | 45 minute count time                                                             |                                                             | 16                                                    | Th-234                                                               | 1350                                                       | E +/- 6 keV                                             | 94.65                                      | 63.29                                                                        | 1066                                                      | Uranium                               | 1599                                                         | 152                                   | Y                                               | 2                               |
| Conclusion is                                  | s that this spectrum is re                                                       | presentative of b                                           | ackground with se                                     | ome elevated natural                                                 | y occurring i                                              | naterials, based                                        | on Note 2.                                 | The maximum numbe                                                            | r of counts collect                                       | ed at a single ener                   | rgy after background subtrac                                 | ction was 210 (4.7                    | 7 cpm).                                         |                                 |
| 30                                             | 806-1-c1.usf                                                                     | mand arms                                                   | 36                                                    | Pu-239                                                               | 91                                                         | E +/- 6 keV                                             | 13.9                                       |                                                                              | 72                                                        | Weapons PU                            | 108                                                          | 41                                    | Y                                               | 4                               |
|                                                | 60 minute court time                                                             | wood over                                                   | 36                                                    | U-233                                                                | 103                                                        | E +/- 6 keV                                             | 13.9                                       |                                                                              | 81                                                        | NA                                    | 122                                                          | No DCGL                               | NA                                              |                                 |
| A                                              | oo minute count time                                                             | concrete noor                                               | 36                                                    | U-238                                                                | 46                                                         | E +/- 6 keV                                             | 13.9                                       |                                                                              | 36                                                        | Uranium                               | 54                                                           | 152                                   | N                                               |                                 |
| 1                                              |                                                                                  |                                                             | 36                                                    | Pb-210                                                               | 329                                                        | E +/- 6 keV                                             | 41.1                                       |                                                                              | 260                                                       | Uranium                               | 390                                                          | No DCGL                               | NA                                              |                                 |
|                                                |                                                                                  |                                                             | 36                                                    | Pb-210                                                               | 1180                                                       | E +/- 6 keV                                             | 45.61                                      |                                                                              | 932                                                       | Uranium                               | 1397                                                         | No DCGL                               | NA                                              |                                 |
|                                                |                                                                                  |                                                             | 36                                                    | Pu-239                                                               | 91                                                         | FWHM                                                    | 13.9                                       |                                                                              | 72                                                        | Weapons PU                            | 108                                                          | 41                                    | Y                                               | 4                               |
|                                                |                                                                                  |                                                             | 36                                                    | Pb-210                                                               | 1180                                                       | FWHM                                                    | 45.61                                      |                                                                              | 932                                                       | Uranium                               | 1397                                                         | No DCGL                               | NA                                              |                                 |
| Conclusion i<br>on base (see<br>activity of be | is that this spectrum is re<br>Note 4). The circa 60 k<br>etween 240 and 364 dpm | presentative of b<br>eV peak associat<br>, if they were rea | ackground with s<br>ted with Am-241<br>1. The maximum | ome elevated natural<br>shows 68 dpm, this is<br>number of counts co | ly occurring is<br>associated will<br>a associated at a si | naterials. Pu-2.<br>vith the Th-234<br>ngle energy afte | 39 is a misi<br>4, which ha<br>er backgrou | dentification believed t<br>s a 63 keV (3.5%) conf<br>and subtraction was 85 | based on the lack of irmation peak as w (1.4 cpm).        | of Am-241 which<br>well as 93 keV pea | would exist in higher activit<br>k (4%). Further the indicat | y given the age o<br>ed Pu-239 peak s | f the weapons i<br>hould show a A               | material stored<br>Am-241       |
| 38                                             | 810-1-c3.usf                                                                     | concrete                                                    | 24                                                    | Th-228                                                               | 4000                                                       | E +/- 6 keV                                             | 87.38                                      |                                                                              | 3158                                                      | Thorium                               | 4736                                                         | No DCGL                               | NA                                              |                                 |
|                                                | 45 minute count time                                                             |                                                             | 24                                                    | Th-234                                                               | 894                                                        | E +/- 6 keV                                             | 87.38                                      | 63.29                                                                        | 706                                                       | Uranium                               | 1059                                                         | 152                                   | Y                                               | 2                               |
|                                                | +3 minute count time                                                             |                                                             | 24                                                    | Th-228                                                               | 4000                                                       | FWHM                                                    | 87.38                                      |                                                                              | 3158                                                      | Thorium                               | 4736                                                         | No DCGL                               | NA                                              |                                 |
|                                                |                                                                                  |                                                             | 24                                                    | Th-234                                                               | 894                                                        | FWHM                                                    | 87.38                                      | 63.29                                                                        | 706                                                       | Uranium                               | 1059                                                         | 152                                   | Y                                               | 2                               |
|                                                |                                                                                  |                                                             | 16                                                    | Th-228                                                               | 1450                                                       | E +/- 6 keV                                             | 87.13                                      |                                                                              | 1145                                                      | Thorium                               | 1717                                                         | No DCGL                               | NA                                              |                                 |
|                                                |                                                                                  |                                                             | 16                                                    | Th-234                                                               | 325                                                        | E +/- 6 keV                                             | 87.13                                      | 63.29                                                                        | 257                                                       | Uranium                               | 385                                                          | 152                                   | Y                                               | 2                               |
| Conclusion i                                   | is that this spectrum is re                                                      | presentative of b                                           | ackground with s                                      | ome elevated natural                                                 | ly occurring i                                             | naterials, based                                        | on Note 2.                                 | The maximum numbe                                                            | er of counts collect                                      | ed at a single ene                    | rgy after background subtrac                                 | ction was 340 (7.0                    | 5 cpm).                                         |                                 |

 Table O-3

 Summary of Gamma Spectroscopy and Radionuclide Identification Results

 SEAD-12 Building Report

 Seneca Army Depot Activity

| Sample<br>Number | Spectra Filename                                         | Sample<br>Material                   | Smoothing<br>Factor                                              | Radionuclides<br>Identified                                                                  | Peak<br>Activity<br>(dpm)                                      | ID Type<br>Energy or<br>EWHMO                                                                  | Peak<br>Energy<br>(keV) e                                                    | Conficultory Peak<br>Energy (kev)                  | Peak Activity<br>(dpm/100 sm <sup>2</sup> )                                       | ), Decay Series                                                           | Upper Bound Peak<br>Activity (dpm/100 cm <sup>2</sup> )                       | DCGLw <sup>9</sup>                                                       | Upper<br>Bound<br>Excerds<br>Surficial<br>DCGL?   | Analysis<br>Notes <sup>1/</sup>           |
|------------------|----------------------------------------------------------|--------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------|
| 49               | 815-15-c3.usf                                            | cinder block                         | 24                                                               | Ac-228                                                                                       | 470                                                            | FWHM                                                                                           | 96.66                                                                        | 336                                                | 371                                                                               | Thorium                                                                   | 557                                                                           | No DCGL                                                                  | NA                                                |                                           |
|                  | 010 10 00.001                                            | ennuer orden                         | 24                                                               | Ph-212                                                                                       | 95                                                             | FWHM                                                                                           | 242.9                                                                        | 78.67                                              | 75                                                                                | Thorium                                                                   | 112                                                                           | No DCGL                                                                  | NA                                                |                                           |
|                  | 45 minute count time                                     |                                      | 16                                                               | Th-234                                                                                       | 870                                                            | E +/- 6 keV                                                                                    | 96.66                                                                        | 63.29                                              | 687                                                                               | Uranium                                                                   | 1030                                                                          | 152                                                                      | Y                                                 | 2                                         |
| Conclusion i     | s that this spectrum is rep                              | presentative of b                    | ackground, base                                                  | d on Note 2. The max                                                                         | cimum numb                                                     | er of counts coll                                                                              | lected at a s                                                                | ingle energy after back                            | ground subtraction                                                                | on was 90 (2 cpm).                                                        |                                                                               |                                                                          |                                                   |                                           |
| 54               | 816-10-c4.usf                                            | wood                                 | 16                                                               | Th-234                                                                                       | 839                                                            | E +/- 6 keV                                                                                    | 91.64                                                                        | 63.29                                              | 662                                                                               | Uranium                                                                   | 993                                                                           | 152                                                                      | Y                                                 | 1, 2. & 3                                 |
|                  | 75 minute count time                                     |                                      | 16                                                               | U-235                                                                                        | 4                                                              | E +/- 6 keV                                                                                    | 191                                                                          | 96.93                                              | 3                                                                                 | Actinium                                                                  | 5                                                                             | 145                                                                      | N                                                 |                                           |
|                  | / > minute count time                                    |                                      | 16                                                               | Th-234                                                                                       | 839                                                            | FWHM                                                                                           | 91.64                                                                        | 63.29                                              | 662                                                                               | Uranium                                                                   | 993                                                                           | 152                                                                      | Y                                                 | 1,2,&3                                    |
|                  |                                                          |                                      | 16                                                               | Co-57                                                                                        | 19                                                             | FWHM                                                                                           | 126.3                                                                        | 136.5                                              | 15                                                                                | NA                                                                        | 22                                                                            | 72600                                                                    | N                                                 |                                           |
|                  |                                                          |                                      | 8                                                                | Th-231                                                                                       | 999                                                            | E +/- 6 keV                                                                                    | 24.04                                                                        | 85.27                                              | 789                                                                               | Actinium                                                                  | 1183                                                                          | No DCGL                                                                  | NA                                                |                                           |
|                  |                                                          |                                      | 8                                                                | Pb-210                                                                                       | 162                                                            | E +/- 6 keV                                                                                    | 49.99                                                                        |                                                    | 128                                                                               | Uranium                                                                   | 192                                                                           | No DCGL                                                                  | NA                                                |                                           |
|                  |                                                          |                                      | 8                                                                | Th-234                                                                                       | 812                                                            | E +/- 6 keV                                                                                    | 90.89                                                                        | 63.29                                              | 641                                                                               | Uranium                                                                   | 962                                                                           | 152                                                                      | Y                                                 | 1, 2, & 3                                 |
|                  |                                                          |                                      | 8                                                                | Th-234                                                                                       | 812                                                            | FWHM                                                                                           | 90.89                                                                        | 63.29                                              | 641                                                                               | Uranium                                                                   | 962                                                                           | 152                                                                      | Y                                                 | 1, 2, & 3                                 |
|                  |                                                          |                                      | 8                                                                | Co-57                                                                                        | 19                                                             | FWHM                                                                                           | 126.5                                                                        | 136.5                                              | 15                                                                                | NA                                                                        | 22                                                                            | 72600                                                                    | N                                                 |                                           |
| This is the p    | revious spectrum analyze                                 | d using a more                       | 36<br>24<br>24<br>16<br>16<br>16<br>16<br>30<br>appropriate back | Pb-210<br>Pb-210<br>Pb-210<br>Pb-210<br>Th-234<br>Pb-210<br>Th-234<br>ground, concrete. If v | 780<br>580<br>580<br>635<br>666<br>635<br>666<br>vas recogniza | FWHM<br>E +/- 6 keV<br>FWHM<br>E +/- 6 keV<br>E +/- 6 keV<br>FWHM<br>FWHM<br>ed that there was | 47.07<br>46.82<br>46.82<br>46.76<br>91.89<br>46.76<br>91.89<br>s a significa | 63.29<br>63.29<br>ant amount of interfere          | 616<br>458<br>458<br>501<br>526<br>501<br>526<br>501<br>526<br>mce from the conte | Uranium<br>Uranium<br>Uranium<br>Uranium<br>Uranium<br>Uranium<br>Uranium | 924<br>687<br>687<br>752<br>789<br>752<br>789<br>ing that were behind the woo | No DCGL<br>No DCGL<br>No DCGL<br>152<br>No DCGL<br>152<br>No DCGL<br>152 | NA<br>NA<br>NA<br>Y<br>NA<br>Y<br>alyzed. This sp | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>2 |
| 5c               | RIG 2 CG und                                             | ainder blesk                         | 26                                                               | Co 57                                                                                        | 12                                                             | EWUM                                                                                           | 120.5                                                                        | 126 5                                              | o                                                                                 | NIA                                                                       | 14                                                                            | 72600                                                                    | N                                                 |                                           |
| 50               | 010-3-C0.usl                                             | Childer Oldek                        | 16                                                               | Th-234                                                                                       | 703                                                            | E+/- 6 keV                                                                                     | 98.16                                                                        | 63.29                                              | 555                                                                               | Uranium                                                                   | 832                                                                           | 152                                                                      | Y                                                 |                                           |
|                  | 60 minute count time                                     |                                      | 16                                                               | 11-235                                                                                       | 50                                                             | E +/- 6 keV                                                                                    | 186.2                                                                        | 96.93                                              | 39                                                                                | Actinium                                                                  | 59                                                                            | 145                                                                      | N                                                 |                                           |
|                  |                                                          |                                      | 16                                                               | 11-735                                                                                       | 50                                                             | FWHM                                                                                           | 186.2                                                                        | 96.93                                              | 30                                                                                | Actinium                                                                  | 59                                                                            | 145                                                                      | N                                                 |                                           |
|                  |                                                          |                                      | 8                                                                | Th 234                                                                                       | 635                                                            | F±/ 6 kaV                                                                                      | 08 /1                                                                        | 63.20                                              | 501                                                                               | Ilranium                                                                  | 752                                                                           | 152                                                                      | v                                                 |                                           |
|                  |                                                          |                                      | 0                                                                | 11.225                                                                                       | 54                                                             | E+/ 6 keV                                                                                      | 186.2                                                                        | 06.03                                              | 43                                                                                | Actinium                                                                  | 64                                                                            | 145                                                                      | N                                                 |                                           |
|                  |                                                          |                                      | 0                                                                | 0-235                                                                                        | 54                                                             | E 4/- U KC Y                                                                                   | 196.2                                                                        | 90.93                                              | 43                                                                                | Actinium                                                                  | 64                                                                            | 145                                                                      | N                                                 |                                           |
| This may be      | a potential positive U-23                                | 8 activity excee                     | edance, although                                                 | this spectrum could b                                                                        | e representat                                                  | ive of backgrou                                                                                | nd as is ind                                                                 | icated by the U238 to                              | U-235 activity rat                                                                | ios. The maximum                                                          | n number of counts collected                                                  | at a single energ                                                        | y after backgro                                   | und                                       |
| subtraction      | was 160 (2.7 cpm).                                       |                                      |                                                                  | P. 030                                                                                       | 201                                                            | E . / / 1                                                                                      | 10.21                                                                        |                                                    | 200                                                                               | 117                                                                       | 462                                                                           | 41                                                                       | V                                                 | 2                                         |
| 59               | 816-7-C9.usf                                             | cinder block                         | 24                                                               | Pu-239                                                                                       | 391                                                            | E +/- 6 keV                                                                                    | 19.31                                                                        |                                                    | 309                                                                               | weapons PU                                                                | 403                                                                           | 41                                                                       | Y                                                 | 5                                         |
|                  | 60 minute count time                                     |                                      | 16                                                               | Pu-239                                                                                       | 266                                                            | E +/- 6 keV                                                                                    | 19.24                                                                        |                                                    | 210                                                                               | Weapons PU                                                                | 315                                                                           | 41                                                                       | Ŷ                                                 | و                                         |
| Conclusion       | is that this spectrum is re<br>0 minutes and there would | presentative of l<br>d also be Am-24 | background, base                                                 | d on note 3. The max<br>f weapons grade Pu w                                                 | kimum numb                                                     | er of counts coll<br>Therefore this is                                                         | lected at a s<br>totope is eit                                               | ingle energy after back<br>her being mis-identifie | ground subtractions of the                                                        | on was 75 (1.3 cpm<br>natural backgroun                                   | h). Further the ID of Pu-239 d for this sample.                               | is based on a 191                                                        | keV peak that i                                   | s only 1 count                            |

#### Table O-3 Summary of Gamma Spectroscopy and Radionuclide Identification Results SEAD-12 Building Report Seneca Army Depot Activity

| Sample<br>Number        | Spectra Filename                                         | Sample<br>Material                                     | Smoothing<br>Pactor                         | Radionicilides                                                | Peak<br>Activity<br>(dpm).    | ID Type<br>(Energy or<br>Exercised) | Peak<br>Energy<br>(key) | Configuratory Pia<br>Energy (key) | e PeakActivity<br>(cpm/100.cm <sup>*</sup> ) | Decay Series                  | Upper Bound Peak<br>Activity (dpm/100 cm <sup>3</sup> ) | DCGLw <sup>v.</sup> | Upper<br>Bound<br>Exceeds<br>Surficial<br>DCGL? | Analysis<br>Notes <sup>W</sup> |
|-------------------------|----------------------------------------------------------|--------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------|-------------------------------|-------------------------------------|-------------------------|-----------------------------------|----------------------------------------------|-------------------------------|---------------------------------------------------------|---------------------|-------------------------------------------------|--------------------------------|
| 60                      | 816-8-C1.usf                                             | concrete                                               | 36                                          | Pb-210                                                        | 802                           | E +/- 6 keV                         | 47.61                   |                                   | 633                                          | Uranium                       | 950                                                     | No DCGL             | NA                                              |                                |
|                         | 60 minute count time                                     |                                                        |                                             | Pb-210                                                        | 161                           | E +/- 6 keV                         | 51.93                   |                                   | 127                                          | Uranium                       | 191                                                     | No DCGL             | NA                                              |                                |
|                         | oo minute count time                                     |                                                        |                                             | Pb-210                                                        | 802                           | FWHM                                | 47.61                   |                                   | 633                                          | Uranium                       | 950                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 24                                          | Pb-210                                                        | 472                           | E +/- 6 keV                         | 40.62                   |                                   | 373                                          | Uranium                       | 559                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        |                                             | Pb-210                                                        | 1130                          | E +/- 6 keV                         | 47.25                   |                                   | 892                                          | Uranium                       | 1338                                                    | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        |                                             | Th-234                                                        | 643                           | E +/- 6 keV                         | 94.15                   | 63.29                             | 508                                          | Uranium                       | 761                                                     | 152                 | Y                                               | I.                             |
|                         |                                                          |                                                        |                                             | Pb-210                                                        | 1130                          | FWHM                                | 47.25                   |                                   | 892                                          | Uranium                       | 1338                                                    | No DCGL             | NA                                              |                                |
| 6                       |                                                          |                                                        |                                             | Th-234                                                        | 643                           | FWHM                                | 94.15                   | 63.29                             | 508                                          | Uranium                       | 761                                                     | 152                 | Y                                               | 1                              |
|                         |                                                          |                                                        | 16                                          | Pb-210                                                        | 542                           | E +/- 6 keV                         | 40.74                   |                                   | 428                                          | Uranium                       | 642                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        |                                             | Pb-210                                                        | 1500                          | E +/- 6 keV                         | 47.07                   |                                   | 1184                                         | Uranium                       | 1776                                                    | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        |                                             | Th-234                                                        | 620                           | E +/- 6 keV                         | 94.9                    | 63.29                             | 489                                          | Uranium                       | 734                                                     | 152                 | Y                                               | 1                              |
|                         |                                                          |                                                        |                                             | Pb-210                                                        | 1500                          | FWHM                                | 47.07                   |                                   | 1184                                         | Uranium                       | 1776                                                    | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        |                                             | Th-234                                                        | 620                           | FWHM                                | 94.9                    | 63.29                             | 489                                          | Uranium                       | 734                                                     | 152                 | Y                                               | 1                              |
| Conclusion i            | is that this spectrum is rep                             | presentative of b                                      | ackground, base                             | d on Note 1. The max                                          | imum numl                     | ber of counts col                   | lected at a s           | ingle energy after bac            | kground subtractio                           | on was 65 (1.1 cpm            | ı).                                                     |                     |                                                 |                                |
| 65                      | 819-11-c24.usf                                           | cinder block                                           | 16                                          | Th-234                                                        | 495                           | E +/- 6 keV                         | 98.41                   | 63.29                             | 391                                          | Uranium                       | 586                                                     | 152                 | Y                                               | 1&3                            |
|                         | 60 minute count time                                     |                                                        | 16                                          | Bi-211                                                        | 298                           | E +/- 6 keV                         | 356.2                   | 74.39                             | 235                                          | Actinium                      | 353                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 16                                          | Pb-214                                                        | 104                           | E +/- 6 keV                         | 356.2                   | 78.67                             | 82                                           | Uranium                       | 123                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 16                                          | Co-57                                                         | 48                            | FWHM                                | 126.8                   | 136.5                             | 38                                           | NA                            | 57                                                      | 72600               | N                                               |                                |
|                         |                                                          |                                                        | 8                                           | Pu-239                                                        | 252                           | E +/- 6 keV                         | 19.54                   |                                   | 199                                          | Weapons PU                    | 298                                                     | 41                  | Y                                               | 4                              |
|                         |                                                          |                                                        | 8                                           | TI-208                                                        | 508                           | E +/- 6 keV                         | 75.59                   | 277.4                             | 401                                          | Thorium                       | 602                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 8                                           | Bi-211                                                        | 339                           | E +/- 6 keV                         | 355.2                   | 74.39                             | 268                                          | Actinium                      | 401                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 8                                           | Pb-214                                                        | 118                           | E +/- 6 keV                         | 355.2                   | 78.67                             | 93                                           | Uranium                       | 140                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 8                                           | TI-208                                                        | 508                           | FWHM                                | 75.59                   | 277.4                             | 401                                          | Thorium                       | 602                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 8                                           | Co-57                                                         | 67                            | FWHM                                | 127                     | 136.5                             | 53                                           | NA                            | 79                                                      | 72600               | N                                               |                                |
| Conclusion associated w | is that this spectrum is re<br>vith any Am-241 as is exp | presentative of b<br>bected with the a<br>cinder block | background, base<br>age of the Pu and<br>36 | ed on Notes 1, 3, & 4.<br>I it is not identified in<br>Ra-226 | The maxim<br>the FWHM<br>4550 | um number of co<br>IDs.<br>FWHM     | 192.7                   | ted at a single energy<br>351.9   | after background s                           | ubtraction was 32:<br>Uranium | 5 (5.4 cpm). Further the Pu-                            | -239 identification | n is incorrect a                                | s it is not                    |
|                         | 819-12-c28.ust                                           |                                                        | 36                                          | U-235                                                         | 277                           | FWHM                                | 192.7                   | 96.93                             | 219                                          | Actinium                      | 328                                                     | 145                 | Y                                               |                                |
|                         |                                                          |                                                        | 24                                          | Ra-226                                                        | 850                           | E +/~ 6 keV                         | 191                     | 351.9                             | 671                                          | Uranium                       | 1006                                                    | 1210                | N                                               |                                |
|                         | 60 ininute count time                                    |                                                        | 24                                          | Bi-211                                                        | 454                           | E +/- 6 keV                         | 353.7                   | 74.39                             | 358                                          | Actinium                      | 538                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 24                                          | Pb-214                                                        | 158                           | E +/- 6 keV                         | 353.7                   | 78.67                             | 125                                          | Uranium                       | 187                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 24                                          | Bi-211                                                        | 454                           | FWHM                                | 353.7                   | 74.39                             | 358                                          | Actinium                      | 538                                                     | No DCGL             | NA                                              |                                |
| 1                       |                                                          |                                                        | 24                                          | Pb-214                                                        | 158                           | FWHM                                | 353.7                   | 78.67                             | 125                                          | Uranium                       | 187                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 16                                          | Ra-226                                                        | 754                           | E +/- 6 keV                         | 190.2                   | 351.9                             | 595                                          | Uranium                       | 893                                                     | 1210                | N                                               |                                |
|                         |                                                          |                                                        | 16                                          | U-235                                                         | 46                            | E +/- 6 keV                         | 190.2                   | 96.93                             | 36                                           | Actinium                      | 54                                                      | 145                 | N                                               |                                |
|                         |                                                          |                                                        | 16                                          | Bi-211                                                        | 428                           | E +/- 6 keV                         | 354.2                   | 74.39                             | 338                                          | Actinium                      | 507                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 16                                          | Pb-214                                                        | 149                           | E +/- 6 keV                         | 354.2                   | 78.67                             | [18                                          | Uranium                       | 176                                                     | No DCGL             | NA                                              |                                |
|                         |                                                          |                                                        | 16                                          | Bi-211                                                        | 428                           | FWHM                                | 354.2                   | 74.39                             | 338                                          | Actinium                      | 507                                                     | No DCGL             | NA                                              |                                |
| -                       |                                                          |                                                        | 16                                          | Pb-214                                                        | 149                           | FWHM                                | 354.2                   | 78.67                             | 118                                          | Uranium                       | 176                                                     | No DCGL             | NA                                              |                                |

Conclusion is that this spectrum is representative of background, except as discussed in the balance of this entry. Also, it would appear that there may be an elevated level of Ra-226 at this location. Based on the results using the various methods and smoothing factors it is highly dobutful that the activity is above the DCGLw. However, at least a significant fraction of the activity would be associated with U-235 since the U-235 progeny are also showing up with variability above the background. This indicates that the variability of the U-235 concnentration may result in it being above background, although it is not above the DCGLw. U-235 produces this peak about 50% of the time and Ra-226 about 4%. The maximum number of counts collected at a single energy after background subtraction was 230 (3.3 cpm).

Table O-3 Summary of Gamma Spectroscopy and Radionuclide Identification Results SEAD-12 Building Report Seneca Army Depot Activity

| Sample<br>Number | Spectra Filename             | Sample<br>Material | Smoothing<br>Factor                                | Radionuciides.<br>Identified                                                                     | Peak<br>Activity<br>(dpm)                                         | ID Type<br>(Energy or<br>FWHM) <sup>b'</sup>                                                                                        | Peak<br>Energy<br>(kéV) ?                                                              | Confirmatory Peak<br>Buergy (keV)     | Reak Activity<br>(dpm/100 cm <sup>2</sup> ) <sup>a/</sup>         | Decay Series                                                                                                   | . Úgper Bound Peak<br>Activity (dpm/100 cm²)<br>«/                | DCGLw                                                             | Upper<br>Bound<br>Exceeds<br>Surficial<br>DCGL? | Analysis<br>Notes <sup>w</sup> |
|------------------|------------------------------|--------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------|--------------------------------|
| 69               | 819-12d-c27.usf              | cinder block       | 36                                                 | Co-57                                                                                            | 32                                                                | FWHM                                                                                                                                | 120.2                                                                                  | 136.5                                 | 25                                                                | NA                                                                                                             | 38                                                                | 72600                                                             | N                                               |                                |
|                  | (1) minute count time        |                    | 16                                                 | Th-228                                                                                           | 2750                                                              | E +/- 6 keV                                                                                                                         | 80.61                                                                                  |                                       | 2171                                                              | Thorium                                                                                                        | 3256                                                              | No DCGL                                                           | NA                                              |                                |
|                  | oo minute count time         |                    | 8                                                  | Th-231                                                                                           | 460                                                               | E +/- 6 keV                                                                                                                         | 21.76                                                                                  | 85.27                                 | 363                                                               | Actinium                                                                                                       | 545                                                               | No DCGL                                                           | NA                                              |                                |
|                  |                              |                    | 8                                                  | Ra-223                                                                                           | 90                                                                | E +/- 6 keV                                                                                                                         | 80.86                                                                                  | 269.5                                 | 71                                                                | Actinium                                                                                                       | 107                                                               | No DCGL                                                           | NA                                              |                                |
|                  |                              |                    | 8                                                  | Th-228                                                                                           | 2950                                                              | E +/- 6 keV                                                                                                                         | 80.86                                                                                  |                                       | 2329                                                              | Thorium                                                                                                        | 3493                                                              | No DCGL                                                           | NA                                              |                                |
|                  |                              |                    | 8                                                  | Th-234                                                                                           | 1330                                                              | E +/- 6 keV                                                                                                                         | 94.15                                                                                  | 63.29                                 | 1050                                                              | Uranium                                                                                                        | 1575                                                              | 152                                                               | Y                                               | 2                              |
|                  |                              |                    | 8                                                  | Ac-228                                                                                           | 846                                                               | FWHM                                                                                                                                | 94.15                                                                                  | 336                                   | 668                                                               | Thorium                                                                                                        | 1002                                                              | No DCGL                                                           | NA                                              |                                |
|                  |                              |                    | 8                                                  | Th-234                                                                                           | 1330                                                              | FWHM                                                                                                                                | 94.15                                                                                  | 63.29                                 | 1050                                                              | Uranium                                                                                                        | 1575                                                              | 152                                                               | Y                                               | 2                              |
| Conclusion i     | is that this spectrum is rep | presentative of b  | ackground, base                                    | d on Note 2. The max                                                                             | imum numbe                                                        | er of counts coll                                                                                                                   | ected at a si                                                                          | ngle energy after back                | ground subtraction                                                | was 300 (5 cpm)                                                                                                |                                                                   |                                                                   |                                                 |                                |
| 70               | 819-1-cl.usf                 | ceramic block      | 36                                                 | Pb-210                                                                                           | 282                                                               | E +/- 6 keV                                                                                                                         | 50.84                                                                                  |                                       | 223                                                               | Uranium                                                                                                        | 334                                                               | No DCGL                                                           | NA                                              |                                |
|                  | 45 minute count time         | ceramic block      | 36                                                 | Th-228                                                                                           | 1590                                                              | E +/- 6 keV                                                                                                                         | 89.13                                                                                  |                                       | 1255                                                              | Thorium                                                                                                        | 1883                                                              | No DCGL                                                           | NA                                              |                                |
|                  | 45 minute count mile         |                    | 24                                                 | Pu-239                                                                                           | 3070                                                              | E +/- 6 keV                                                                                                                         | 19.31                                                                                  |                                       | 2423                                                              | Weapons PU                                                                                                     | 3635                                                              | 41                                                                | Y                                               | 4                              |
|                  |                              |                    | 24                                                 |                                                                                                  | 402                                                               | E +/ 6 kall                                                                                                                         | £1.20                                                                                  |                                       | 210                                                               | 11                                                                                                             | 477                                                               |                                                                   | 314                                             |                                |
|                  |                              |                    | 24                                                 | Pb-210                                                                                           | 403                                                               | E T/- O KEY                                                                                                                         | 51.39                                                                                  |                                       | 318                                                               | Uranium                                                                                                        | 4//                                                               | No DCGL                                                           | NA                                              |                                |
|                  |                              |                    | 24                                                 | Pb-210<br>Am-241                                                                                 | 72                                                                | E +/- 6 keV                                                                                                                         | 56.38                                                                                  | 13.9                                  | 57                                                                | Weapons PU                                                                                                     | 85                                                                | No DCGL<br>40                                                     | Y                                               | 4                              |
|                  |                              |                    | 24<br>24<br>24                                     | Pb-210<br>Am-241<br>Am-241                                                                       | 403<br>72<br>76                                                   | E +/- 6 keV<br>E +/- 6 keV                                                                                                          | 56.38<br>59.11                                                                         | 13.9<br>13.9                          | 57<br>60                                                          | Weapons PU<br>Weapons PU                                                                                       | 85<br>90                                                          | No DCGL<br>40<br>40                                               | Y<br>Y                                          | 4<br>4                         |
|                  |                              |                    | 24<br>24<br>24<br>24                               | Pb-210<br>Am-241<br>Am-241<br>Th-228                                                             | 72<br>76<br>1720                                                  | E +/- 6 keV<br>E +/- 6 keV<br>E +/- 6 keV<br>E +/- 6 keV                                                                            | 56.38<br>59.11<br>87.63                                                                | 13.9<br>13.9                          | 57<br>60<br>1358                                                  | Weapons PU<br>Weapons PU<br>Thorium                                                                            | 85<br>90<br>2037                                                  | No DCGL<br>40<br>40<br>No DCGL                                    | Y<br>Y<br>NA                                    | 4<br>4                         |
|                  |                              |                    | 24<br>24<br>24<br>24<br>24                         | Pb-210<br>Am-241<br>Am-241<br>Th-228<br>Th-234                                                   | 403<br>72<br>76<br>1720<br>385                                    | E +/- 6 keV<br>E +/- 6 keV<br>E +/- 6 keV<br>E +/- 6 keV<br>E +/- 6 keV                                                             | 56.38<br>59.11<br>87.63<br>87.63                                                       | 13.9<br>13.9<br>63.29                 | 318<br>57<br>60<br>1358<br>304                                    | Weapons PU<br>Weapons PU<br>Thorium<br>Uranium                                                                 | 477<br>85<br>90<br>2037<br>456                                    | No DCGL<br>40<br>40<br>No DCGL<br>152                             | Y<br>Y<br>NA<br>Y                               | 4<br>4<br>1                    |
|                  |                              |                    | 24<br>24<br>24<br>24<br>24<br>16                   | Pb-210<br>Am-241<br>Am-241<br>Th-228<br>Th-234<br>Pu-239                                         | 403<br>72<br>76<br>1720<br>385<br>3500                            | E +/- 6 keV<br>E +/- 6 keV                                              | 56.38<br>59.11<br>87.63<br>87.63<br>19.39                                              | 13.9<br>13.9<br>63.29                 | 57<br>60<br>1358<br>304<br>2763                                   | Weapons PU<br>Weapons PU<br>Thorium<br>Uranium<br>Weapons PU                                                   | 477<br>85<br>90<br>2037<br>456<br>4144                            | No DCGL<br>40<br>40<br>No DCGL<br>152<br>41                       | Y<br>Y<br>NA<br>Y<br>Y                          | 4<br>4<br>1<br>4               |
|                  |                              |                    | 24<br>24<br>24<br>24<br>24<br>16<br>16             | Pb-210<br>Am-241<br>Am-241<br>Th-228<br>Th-234<br>Pu-239<br>Pb-210                               | 403<br>72<br>76<br>1720<br>385<br>3500<br>479                     | E +/- 6 keV<br>E +/- 6 keV                               | 51.39<br>56.38<br>59.11<br>87.63<br>87.63<br>19.39<br>51.33                            | 13.9<br>13.9<br>63.29                 | 518<br>57<br>60<br>1358<br>304<br>2763<br>378                     | Weapons PU<br>Weapons PU<br>Thorium<br>Uranium<br>Weapons PU<br>Uranium                                        | 477<br>85<br>90<br>2037<br>456<br>4144<br>567                     | No DCGL<br>40<br>No DCGL<br>152<br>41<br>No DCGL                  | Y<br>Y<br>NA<br>Y<br>NA                         | 4<br>4<br>1<br>4               |
|                  |                              |                    | 24<br>24<br>24<br>24<br>24<br>16<br>16             | Pb-210<br>Am-241<br>Am-241<br>Th-228<br>Th-234<br>Pu-239<br>Pb-210<br>Am-241                     | 403<br>72<br>76<br>1720<br>385<br>3500<br>479<br>73               | E +/- 6 keV<br>E +/- 6 keV                | 51.39<br>56.38<br>59.11<br>87.63<br>87.63<br>19.39<br>51.33<br>56.13                   | 13.9<br>13.9<br>63.29<br>13.9         | 57<br>60<br>1358<br>304<br>2763<br>378<br>58                      | Weapons PU<br>Weapons PU<br>Thorium<br>Uranium<br>Weapons PU<br>Uranium<br>Weapons PU                          | 477<br>85<br>90<br>2037<br>456<br>4144<br>567<br>86               | No DCGL<br>40<br>No DCGL<br>152<br>41<br>No DCGL<br>40            | Y<br>Y<br>NA<br>Y<br>NA<br>Y                    | 4<br>4<br>1<br>4               |
|                  |                              |                    | 24<br>24<br>24<br>24<br>16<br>16<br>16<br>16       | Pb-210<br>Am-241<br>Am-241<br>Th-228<br>Th-234<br>Pu-239<br>Pb-210<br>Am-241<br>Am-241           | 403<br>72<br>76<br>1720<br>385<br>3500<br>479<br>73<br>43         | E +/- 6 keV<br>E +/- 6 keV | 51.39<br>56.38<br>59.11<br>87.63<br>87.63<br>19.39<br>51.33<br>56.13<br>59.05          | 13.9<br>13.9<br>63.29<br>13.9<br>13.9 | 57<br>60<br>1358<br>304<br>2763<br>378<br>58<br>34                | Weapons PU<br>Weapons PU<br>Thorium<br>Uranium<br>Weapons PU<br>Uranium<br>Weapons PU<br>Weapons PU            | 477<br>85<br>90<br>2037<br>456<br>4144<br>567<br>86<br>51         | No DCGL<br>40<br>No DCGL<br>152<br>41<br>No DCGL<br>40<br>40      | Y<br>Y<br>NA<br>Y<br>NA<br>Y<br>Y               | 4<br>4<br>1<br>4<br>4          |
|                  |                              |                    | 24<br>24<br>24<br>24<br>16<br>16<br>16<br>16<br>16 | Pb-210<br>Am-241<br>Am-241<br>Th-228<br>Th-234<br>Pu-239<br>Pb-210<br>Am-241<br>Am-241<br>Th-228 | 403<br>72<br>76<br>1720<br>385<br>3500<br>479<br>73<br>43<br>1840 | E +/- 6 keV<br>E +/- 6 keV | 51.39<br>56.38<br>59.11<br>87.63<br>87.63<br>19.39<br>51.33<br>56.13<br>59.05<br>88.38 | 13.9<br>13.9<br>63.29<br>13.9<br>13.9 | 318<br>57<br>60<br>1358<br>304<br>2763<br>378<br>58<br>34<br>1453 | Weapons PU<br>Weapons PU<br>Thorium<br>Uranium<br>Weapons PU<br>Uranium<br>Weapons PU<br>Weapons PU<br>Thorium | 477<br>85<br>90<br>2037<br>456<br>4144<br>567<br>86<br>51<br>2179 | No DCGL<br>40<br>No DCGL<br>152<br>41<br>No DCGL<br>40<br>No DCGL | Y<br>Y<br>NA<br>Y<br>NA<br>Y<br>NA              | 4<br>1<br>4<br>4               |

Conclusion is that this spectrum is representative of background with some elevated naturally occurring materials, based on Notes 1 and 4. Since the Th-234 and Pb-210 activities above background are consistent the circa 50 keV peak is more likely to be related to the Pb-210, than the Am-241. Even if the Am-241 were present a significant portion of the activity in this peak would still be related to the Pb-210 and the Am-241 would probably be well below the DCGLw. A comparison of the Am-241 activity indicates that it is less than the DCGLeme, further the alpha and beta survey results are not indicative of contamination at this location. Also the Pu-239 and Am-241 are misidentified based on the actual peak energies seen for Pu-239 (19.3 instead of 13.9) and the ratio of Pu-239 to Am-241 is incorrect for weapons material of this age. The maximum number of counts collected at a single energy after background subtraction was 62 (1.4 cpm).

| 71 | 819-1-c2.usf         | concrete | 36 | Pb-210 | 1620 | E +/- 6 keV | 51.93 |       | 1279  | Uranium    | 1918 | No DCGL | NA |       |
|----|----------------------|----------|----|--------|------|-------------|-------|-------|-------|------------|------|---------|----|-------|
|    | 60 minute count time |          | 24 | Pb-210 | 1930 | E +/- 6 keV | 52    |       | 1524  | Uranium    | 2285 | No DCGL | NA |       |
|    | oo minute count time |          | 16 | Pb-210 | 233  | E +/- 6 keV | 47.92 |       | • 184 | Uranium    | 276  | No DCGL | NA |       |
|    |                      |          | 16 | Pb-210 | 1570 | E +/- 6 keV | 52.3  |       | 1239  | Uranium    | 1859 | No DCGL | NA |       |
| 1  |                      |          | 16 | Am-241 | 188  | E +/- 6 keV | 57.11 | 13.9  | 148   | Weapons PU | 223  | 40      | Y  | 1 & 4 |
|    |                      |          | 16 | TI-208 | 177  | E +/- 6 keV | 70.83 | 277.4 | 140   | Thorium    | 210  | No DCGL | NA |       |

Conclusion is that this spectrum is representative of background with some elevated naturally occurring materials, based on Notes 1 and 4. Since the Th-234 and Pb-210 activities above background are consistent, the circa 50 keV peak is more likely to be related to the Pb-210, than the Am-241. Even if the Am-241 were present a significant portion of the activity in this peak would still be related to the Po-210 and the Am-241 would probably be well below the DCGLw. The maximum number of counts collected at a single energy after background subtraction was 300 (5 cpm).

| 78 | 819-4-c8.usf         | cinder block | 16 | Pb-210 | 352 | E +/- 6 keV | 48.28 |       | 278 | Uranium  | 417 | No DCGL | NA |   |
|----|----------------------|--------------|----|--------|-----|-------------|-------|-------|-----|----------|-----|---------|----|---|
|    | 40 minute count time |              | 16 | Ac-228 | 190 | FWHM        | 95.91 | 336   | 150 | Thorium  | 225 | No DCGL | NA |   |
|    | oo minute count time |              | 8  | Pb-210 | 435 | E +/- 6 keV | 48.41 |       | 343 | Uranium  | 515 | No DCGL | NA |   |
|    |                      |              | 8  | Th-234 | 395 | E +/- 6 keV | 95.91 | 63.29 | 312 | Uranium  | 468 | 152     | Y  | 1 |
|    |                      |              | 8  | U-235  | 74  | E +/- 6 keV | 179.9 | 96.93 | 58  | Actinium | 88  | 145     | N  |   |
|    |                      |              |    |        |     |             |       |       |     |          |     |         |    |   |

Conclusion is that this spectrum is representative of background, based on Note 1. The maximum number of counts collected at a single energy after background subtraction was 260 (4.3 cpm).

Table O-3 Summary of Gamma Spectroscopy and Radionuclide Identification Results SEAD-12 Building Report Seneca Army Depot Activity

| Sample<br>Number Spectra<br>80 819-5<br>45 minute<br>Conclusion is that this sp | 5-c11.usf<br>te count time | Sample<br>Material<br>wood panel<br>over cinder | Smoothing<br>Factor | Radionuclides<br>Identified | Peak<br>Activity<br>(dpm) # | ID:Type<br>(Energy or<br>FWHM) <sup>W</sup> | Peak<br>Energy<br>(kéV) " | Confirmatory Peak<br>Energy (keV) | Peak Activity       | Decay Series     | Upper Bound Peak<br>Activity (dpm/100 cm <sup>2</sup> ) | DCGLw   | Bound<br>Exceeds   | Analysis |
|---------------------------------------------------------------------------------|----------------------------|-------------------------------------------------|---------------------|-----------------------------|-----------------------------|---------------------------------------------|---------------------------|-----------------------------------|---------------------|------------------|---------------------------------------------------------|---------|--------------------|----------|
| 80 819-5<br>45 minute<br>Conclusion is that this sp                             | 5-c11.usf<br>te count time | wood panel<br>over cinder                       | 36                  | 11.235                      |                             |                                             |                           | in it to                          | forbinitatio our 34 |                  | , e                                                     |         | Surficial<br>DCGL? | Notes "  |
| 45 minute<br>Conclusion is that this sp                                         | te count time              | over cinder                                     | 24                  | 0-235                       | 63                          | FWHM                                        | 183.9                     | 96.93                             | 50                  | Actinium         | 75                                                      | 145     | N                  |          |
| Conclusion is that this sp                                                      | te count time              | 1.1                                             | 24                  | U-235                       | 118                         | FWHM                                        | 181.2                     | 96.93                             | 93                  | Actinium         | 140                                                     | 145     | N                  |          |
| Conclusion is that this sp                                                      |                            | DIOCK Wall                                      | 16                  | Pb-210                      | 742                         | E +/- 6 keV                                 | 46.15                     |                                   | 586                 | Uranium          | 879                                                     | No DCGL | NA                 |          |
| Conclusion is that this sp                                                      |                            |                                                 | 16                  | Th-228                      | 2320                        | E +/- 6 keV                                 | 79.6                      |                                   | 1831                | Thorium          | 2747                                                    | No DCGL | NA                 |          |
| Conclusion is that this sp                                                      |                            |                                                 | 16                  | Th-234                      | 1010                        | E +/- 6 keV                                 | 92.14                     | 63.29                             | 797                 | Uranium          | 1196                                                    | 152     | Y                  | 1        |
| Conclusion is that this sp                                                      |                            |                                                 | 16                  | U-235                       | 79                          | E +/- 6 keV                                 | 182.2                     | 96.93                             | 62                  | Actinium         | 94                                                      | 145     | N                  |          |
| Conclusion is that this sp                                                      |                            |                                                 | 16                  | Pb-210                      | 742                         | FWHM                                        | 46.15                     |                                   | 586                 | Uranium          | 879                                                     | No DCGL | NA                 |          |
| Conclusion is that this sp                                                      |                            |                                                 | 16                  | Th-234                      | 1010                        | FWHM                                        | 92.14                     | 63.29                             | 797                 | Uranium          | 1196                                                    | 152     | Y                  | 1        |
|                                                                                 | spectrum is rep            | resentative of b                                | ackground, based    | d on Note 1. The max        | imum numbe                  | r of counts colle                           | ected at a si             | ngle energy after backs           | ground subtraction  | vas 240 (5.3 cpm | l).                                                     |         |                    |          |
| 81 819-5                                                                        | 5-c12.usf                  | wood panel                                      | 24                  | Th-234                      | 691                         | E +/- 6 keV                                 | 98.41                     | 63.29                             | 545                 | Uranium          | 818                                                     | 152     | Y                  | 1        |
| 45                                                                              |                            | over cinder                                     | 24                  | T1-208                      | 1470                        | FWHM                                        | 72,33                     | 277.4                             | 1160                | Thorium          | 1741                                                    | No DCGL | NA                 |          |
| 45 minute                                                                       | te count time              | block wall                                      | 24                  | Ac-228                      | 438                         | FWHM                                        | 98.41                     | 336                               | 346                 | Thorium          | 519                                                     | No DCGL | NA                 |          |
|                                                                                 |                            |                                                 | 16                  | Pb-210                      | 877                         | E +/- 6 keV                                 | 46.95                     |                                   | 692                 | Uranium          | 1038                                                    | No DCGL | NA                 |          |
|                                                                                 |                            |                                                 | 16                  | Th-234                      | 882                         | E +/- 6 keV                                 | 97.41                     | 63.29                             | 696                 | Uranium          | 1044                                                    | 152     | Y                  | 1        |
|                                                                                 |                            |                                                 | 16                  | Pb-210                      | 877                         | FWHM                                        | 46.95                     |                                   | 692                 | Uranium          | 1038                                                    | No DCGL | NA                 |          |
|                                                                                 |                            |                                                 | 16                  | T1-208                      | 1760                        | FWHM                                        | 71.58                     | 277.4                             | 1389                | Thorium          | 2084                                                    | No DCGL | NA                 |          |
|                                                                                 |                            |                                                 | 16                  | Ac-228                      | 560                         | FWHM                                        | 97.41                     | 336                               | 442                 | Thorium          | 663                                                     | No DCGL | NA                 |          |
| Conclusion is that this sp                                                      | spectrum is rep            | resentative of b                                | ackground, base     | d on Note 1. The ma         | ximum numb                  | er of counts coll                           | ected at a s              | ingle energy after back           | ground subtraction  | was 250 (5.6 cp  | m).                                                     |         |                    |          |
| 82 819-5                                                                        | 5-cl3.usf                  | wood panel                                      | 24                  | Co-57                       | 23                          | FWHM                                        | 122.2                     | 136.5                             | 18                  | NA               | 27                                                      | 72600   | N                  |          |
|                                                                                 |                            | over cinder                                     | 24                  | Ra-226                      | 1580                        | FWHM                                        | 188.4                     | 351.9                             | 1247                | Uranium          | 1871                                                    | 1210    | Y                  | 5        |
| 45 minute                                                                       | ite count time             | block wall                                      | 24                  | U-235                       | 96                          | FWHM                                        | 188.4                     | 96.93                             | 76                  | Actinium         | 114                                                     | 145     | N                  |          |
|                                                                                 |                            |                                                 | 16                  | Co-57                       | 33                          | FWHM                                        | 122.2                     | 136.5                             | 26                  | NA               | 39                                                      | 72600   | N                  |          |
|                                                                                 |                            |                                                 | 16                  | Ra-226                      | 912                         | FWHM                                        | 187.2                     | 351.9                             | 720                 | Uranium          | 1080                                                    | 1210    | N                  |          |
|                                                                                 |                            |                                                 | 16                  | U-235                       | 55                          | FWHM                                        | 197 2                     | 96.93                             | 43                  | Actinium         | 65                                                      | 145     | N                  |          |

Conclusion is that this spectrum is representative of background with the possible exception of Ra-226, based on Note 5. The maximum number of counts collected at a single energy after background subtraction was 270 (6 cpm).

## Table O-3 Summary of Gamma Spectroscopy and Radionuclide Identification Results SEAD-12 Building Report Seneca Army Depot Activity

| Sample<br>Number | Spectra Filename            | Sample<br>Material | Smoothing<br>Factor | Radionuclides<br>Identified | Peak<br>Activity<br>(dpm) | D Type<br>(Energy or<br>FWHM) <sup>b'</sup> | Peak<br>Energy<br>(keV) <sup>et</sup> | Confirmatory Peak<br>Energy (ReV) | Peak Activity<br>(dpm/100 cm <sup>2</sup> ) <sup>at</sup> | Decay Series      | Upper Bound Peak<br>Activity (dpm/100 cm <sup>2</sup> )<br>#/ | DCCI.            | Upper<br>Bound<br>Exceeds<br>Surficial<br>DCGL? | Analysis<br>Notes <sup>1/</sup> |
|------------------|-----------------------------|--------------------|---------------------|-----------------------------|---------------------------|---------------------------------------------|---------------------------------------|-----------------------------------|-----------------------------------------------------------|-------------------|---------------------------------------------------------------|------------------|-------------------------------------------------|---------------------------------|
| 83               | 819-5-c14.usf               | wood pane!         | 36                  | Pb-210                      | 861                       | E +/- 6 keV                                 | 47.13                                 |                                   | 680                                                       | Uranium           | 1020                                                          | No DCGL          | NA                                              |                                 |
|                  | 45 minute count time        | over cinder        | 36                  | Pb-210                      | 861                       | FWHM                                        | 47.13                                 |                                   | 680                                                       | Uranium           | 1020                                                          | No DCGL          | NA                                              |                                 |
|                  | 45 millate count time       | block wall         | 24                  | Pb-210                      | 1100                      | E +/- 6 keV                                 | 47.07                                 |                                   | 868                                                       | Uranium           | 1303                                                          | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 24                  | Pb-210                      | 1100                      | FWHM                                        | 47.07                                 |                                   | 868                                                       | Uranium           | 1303                                                          | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Pu-239                      | 3110                      | E +/- 6 keV                                 | 19.47                                 |                                   | 2455                                                      | Weapons PU        | 3683                                                          | 41               | Y                                               | 4                               |
|                  |                             |                    | 16                  | Pb-210                      | 725                       | E +/- 6 keV                                 | 47.01                                 |                                   | 572                                                       | Uranium           | 858                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Pb-210                      | 725                       | FWHM                                        | 47.01                                 |                                   | 572                                                       | Uranium           | 858                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Ra-226                      | 546                       | FWHM                                        | 183.7                                 | 351.9                             | 431                                                       | Uranium           | 647                                                           | 1210             | N                                               |                                 |
|                  |                             |                    | 16                  | U-235                       | 33                        | FWHM                                        | 183.7                                 | 96.93                             | 26                                                        | Actinium          | 39                                                            | 145              | N                                               |                                 |
|                  |                             |                    | 36                  | Th-228                      | 146                       | E +/- 6 keV                                 | 84.87                                 |                                   | 115                                                       | Thorium           | 173                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 36                  | Ac-228                      | 8                         | E +/- 6 keV                                 | 91.89                                 | 336                               | 6                                                         | Thorium           | 9                                                             | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 36                  | Ac-228                      | 31                        | E +/- 6 keV                                 | 96.66                                 | 336                               | 24                                                        | Thorium           | 37                                                            | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 36                  | Ra-226                      | 1490                      | E +/- 6 keV                                 | 182.7                                 | 351.9                             | 1176                                                      | Uranium           | 1764                                                          | 1210             | Y                                               | 5                               |
|                  |                             |                    | 36                  | U-235                       | 91                        | E +/- 6 keV                                 | 182.7                                 | 96.93                             | 72                                                        | Actinium          | 108                                                           | 145              | N                                               |                                 |
|                  |                             |                    | 36                  | Bi-211                      | 178                       | E +/- 6 keV                                 | 354                                   | 74.39                             | 141                                                       | Actinium          | 211                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 36                  | Pb-214                      | 62                        | E +/- 6 keV                                 | 354                                   | 78.67                             | 49                                                        | Uranium           | 73                                                            | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 36                  | Th-228                      | 146                       | FWHM                                        | 84.87                                 |                                   | 115                                                       | Thorium           | 173                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 36                  | Th-234                      | 12                        | FWHM                                        | 91.89                                 | 63.29                             | 9                                                         | Uranium           | 14                                                            | 152              | N                                               |                                 |
|                  |                             |                    | 36                  | Ac-228                      | 31                        | FWHM                                        | 96.66                                 | 336                               | 24                                                        | Thorium           | 37                                                            | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 36                  | Ra-226                      | 1490                      | FWHM                                        | 182.7                                 | 351.9                             | 1176                                                      | Uranium           | 1764                                                          | 1210             | Y                                               | 5                               |
|                  |                             |                    | 36                  | U-235                       | 91                        | FWHM                                        | 182.7                                 | 96.93                             | 72                                                        | Actinium          | 108                                                           | 145              | N                                               |                                 |
|                  |                             |                    | 36                  | Bi-211                      | 178                       | FWHM                                        | 354                                   | 74.39                             | 141                                                       | Actinium          | 211                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 36                  | Pb-214                      | 62                        | FWHM                                        | 354                                   | 78.67                             | 49                                                        | Uranium           | 73                                                            | No DCGL          | NA                                              |                                 |
| Conclusion is    | s that this spectrum is rep | presentative of b  | ackground, based    | d on Notes 4 & 5, wit       | h the possible            | e exception of R                            | a-226. The                            | maximum number of                 | counts collected at a                                     | a single energy a | fter background subtraction                                   | was 200 (4.4 cpm | ).                                              |                                 |
| 86               | 819-7-c17.usf               | cinder block       | 24                  | Pb-210                      | 1020                      | E +/- 6 keV                                 | 40.56                                 |                                   | 805                                                       | Uranium           | 1208                                                          | No DCGL          | NA                                              |                                 |
|                  | 46 minute                   |                    | 24                  | Th-234                      | 957                       | E +/- 6 keV                                 | 94.15                                 | 63.29                             | 755                                                       | Uranium           | 1133                                                          | 152              | Y                                               | 1.2.&3                          |
|                  | 45 minute count time        |                    | 24                  | Ac-228                      | 607                       | FWHM                                        | 94.15                                 | 336                               | 479                                                       | Thorium           | 719                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 24                  | Th-234                      | 957                       | FWHM                                        | 94.15                                 | 63.29                             | 755                                                       | Uranium           | 1133                                                          | 152              | Y                                               | 1, 2, & 3                       |
|                  |                             |                    | 16                  | Pb-210                      | 1250                      | E +/- 6 keV                                 | 40.62                                 |                                   | 987                                                       | Uranium           | 1480                                                          | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Th-228                      | 3680                      | E +/- 6 keV                                 | 79.1                                  |                                   | 2905                                                      | Thorium           | 4358                                                          | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Th-234                      | 1270                      | E +/- 6 keV                                 | 94.4                                  | 63.29                             | 1003                                                      | Uranium           | 1504                                                          | 152              | Y                                               | 1, 2, & 3                       |
|                  |                             |                    | 16                  | Ac-228                      | 803                       | FWHM                                        | 94.4                                  | 336                               | 634                                                       | Thorium           | 951                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Th-234                      | 1270                      | FWHM                                        | 94.4                                  | 63.29                             | 1003                                                      | Uranium           | 1504                                                          | 152              | Y                                               | 1, 2, & 3                       |
| Conclusion is    | s that this spectrum is re  | presentative of b  | ackground, base     | d on Notes 1, 2, and 3      | 3. The maxim              | um number of o                              | counts colle                          | cted at a single energy           | after background s                                        | ubtraction was 3  | 10 (6.9 cpm).                                                 |                  |                                                 |                                 |
| 88               | 819-8-c19.usf               | cinder block       | 36                  | Pb-210                      | 101                       | E +/- 6 keV                                 | 47.49                                 |                                   | 80                                                        | Uranium           | 120                                                           | No DCGL          | NA                                              |                                 |
|                  | 15                          |                    | 24                  | Pb-210                      | 165                       | E +/- 6 keV                                 | 47.68                                 |                                   | 130                                                       | Uranium           | 195                                                           | No DCGL          | NA                                              |                                 |
|                  | 45 minute count time        |                    | 16                  | Pb-210                      | 221                       | E +/- 6 keV                                 | 47.68                                 |                                   | 174                                                       | Uranium           | 262                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Th-228                      | 2820                      | E +/- 6 keV                                 | 83.87                                 |                                   | 2226                                                      | Thorium           | 3339                                                          | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Th-234                      | 181                       | E +/- 6 keV                                 | 97.41                                 | 63.29                             | 143                                                       | Uranium           | 214                                                           | 152              | Y                                               | 2 & 3                           |
|                  |                             |                    | 16                  | Ra-223                      | 86                        | FWHM                                        | 83.87                                 | 269.5                             | 68                                                        | Actinium          | 102                                                           | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Th-228                      | 2820                      | FWHM                                        | 83.87                                 |                                   | 2226                                                      | Thorium           | 3339                                                          | No DCGL          | NA                                              |                                 |
|                  |                             |                    | 16                  | Ac-228                      | 115                       | FWHM                                        | 97.41                                 | 336                               | 91                                                        | Thorium           | 136                                                           | No DCGL          | NA                                              |                                 |
| Conclusion i     | is that this spectrum is re | presentative of b  | ackground, base     | d on Notes 2 and 3.         | The maximum               | number of cou                               | nts collecte                          | d at a single energy af           | ter background sub                                        | raction was 245   | (5.4 cpm).                                                    |                  |                                                 |                                 |

#### Table O-3 Summary of Gamma Spectroscopy and Radionuclide Identification Results SEAD-12 Building Report Seneca Army Depot Activity

| Sample<br>Number             | Spectra Filename                                          | Sample<br>Material | Smoothing<br>Factor                   | Radionuclides<br>Identified                       | Pcak<br>Activity<br>(dpm) <sup>™</sup> | ID'Type-<br>(Energy or<br>FWHM) <sup>b'</sup> | Peak<br>Energy<br>(keV) */ | Confirmatory Per<br>Energy (ReV)                                                                                 | k Peak Activity<br>(dpm/100 cm <sup>2</sup> ) <sup>d</sup> | Decay Series     | Upper Bound Peak<br>Activity (dpm/100 cm <sup>2</sup> ) | DCGL.,"            | Upper<br>Bound<br>Exceeds<br>Surficial<br>DCGL? | Analysis<br>Notes <sup>b'</sup> |
|------------------------------|-----------------------------------------------------------|--------------------|---------------------------------------|---------------------------------------------------|----------------------------------------|-----------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------|---------------------------------------------------------|--------------------|-------------------------------------------------|---------------------------------|
| 92                           | 823-1-c1.usf                                              | cinder block       | 8                                     | Pu-239                                            | 1630                                   | E +/- 6 keV                                   | 19.24                      | and the second | 1287                                                       | Weapons PU       | 1930                                                    | 41                 | Y                                               | 4                               |
|                              | 45 minute count time                                      |                    | 8                                     | Pb-210                                            | 700                                    | E +/- 6 keV                                   | 52.12                      |                                                                                                                  | 553                                                        | Uranium          | 829                                                     | No DCGL            | NA                                              |                                 |
| Conclusion i<br>acutal energ | is that this spectrum is rep<br>y of the peak (19.24 keV) | and that Am-24     | ackground, based<br>1 was not specifi | d on Note 4. The main<br>ically identified at thi | kimum numbe<br>s location.             | er of counts coll                             | ected at a si              | ngle energy after ba                                                                                             | ekground subtraction                                       | was 220 (4.9 cp  | m). Further the identificatio                           | n of Pu-239 is dee | med incorrect                                   | based on the                    |
| 98                           | Material Sample 819-                                      | material           | 36                                    | Pb-210                                            | 337                                    | E +/- 6 keV                                   | 42.69                      |                                                                                                                  | 266                                                        | Uranium          | 399                                                     | No DCGL            | NA                                              |                                 |
|                              | 12D-c25 Alpha high                                        |                    | 36                                    | Pb-210                                            | 159                                    | E +/- 6 keV                                   | 45                         |                                                                                                                  | 126                                                        | Uranium          | 188                                                     | No DCGL            | NA                                              |                                 |
|                              | spot.usf                                                  |                    | 36                                    | Th-234                                            | 508                                    | E +/- 6 keV                                   | 93.15                      | 63.29                                                                                                            | 401                                                        | Uranium          | 602                                                     | 152                | Y                                               | 1                               |
|                              | 25 minute count time                                      |                    | 36                                    | Th-234                                            | 508                                    | FWHM                                          | 93.15                      | 63.29                                                                                                            | 401                                                        | Uranium          | 602                                                     | 152                | Y                                               | 1                               |
| Conclusion                   | is that this spectrum is ma                               | ybe representat    | ive of backgroun                      | d, based on Note 1.                               | The maximum                            | n number of cou                               | nts collecte               | d at a single energy a                                                                                           | fter background subt                                       | raction was 30 ( | 1.2 cpm).                                               |                    |                                                 |                                 |
| 102                          | Material Sample                                           | material           | 36                                    | Pb-210                                            | 601                                    | E +/- 6 keV                                   | 42.87                      |                                                                                                                  | 474                                                        | Uranium          | 712                                                     | No DCGL            | NA                                              |                                 |
|                              | BKGD-CB1.usf                                              |                    | 36                                    | Pb-210                                            | 358                                    | E +/- 6 keV                                   | 51.2                       |                                                                                                                  | 283                                                        | Uranium          | 424                                                     | No DCGL            | NA                                              |                                 |
|                              | 0.0                                                       |                    | 24                                    | Pb-210                                            | 135                                    | E +/- 6 keV                                   | 43.23                      |                                                                                                                  | 107                                                        | Uranium          | 160                                                     | No DCGL            | NA                                              |                                 |
|                              | 90 minute count time                                      |                    | 24                                    | Pb-210                                            | 602                                    | E +/- 6 keV                                   | 50.78                      |                                                                                                                  | 475                                                        | Uranium          | 713                                                     | No DCGL            | NA                                              |                                 |
|                              |                                                           |                    | 24                                    | Am-241                                            | 115                                    | E +/- 6 keV                                   | 57.84                      | 13.9                                                                                                             | 91                                                         | Weapons PU       | 136                                                     | 40                 | Y                                               | 6                               |
|                              |                                                           |                    | 24                                    | Th-234                                            | 296                                    | E +/- 6 keV                                   | 95.65                      | 63.29                                                                                                            | 234                                                        | Uranium          | 350                                                     | 152                | Y                                               | I.                              |
|                              |                                                           |                    | 16                                    | Pu-239                                            | 607                                    | E +/- 6 keV                                   | 16.42                      |                                                                                                                  | 479                                                        | Weapons PU       | 719                                                     | 41                 | Y                                               |                                 |
| [                            |                                                           |                    | 16                                    | U-238                                             | 304                                    | E +/- 6 keV                                   | 16.42                      |                                                                                                                  | 240                                                        | Uranium          | 360                                                     | 152                | Y                                               | 1                               |
|                              |                                                           |                    | 16                                    | Pb-210                                            | 210                                    | E +/- 6 keV                                   | 43.36                      |                                                                                                                  | 166                                                        | Uranium          | 249                                                     | No DCGL            | NA                                              |                                 |
|                              |                                                           |                    | 16                                    | Pb-210                                            | 326                                    | E +/- 6 keV                                   | 50.6                       |                                                                                                                  | 257                                                        | Uranium          | 386                                                     | No DCGL            | NA                                              |                                 |
|                              |                                                           |                    | 16                                    | Am-241                                            | 136                                    | E +/- 6 keV                                   | 57.71                      | 13.9                                                                                                             | 107                                                        | Weapons PU       | 161                                                     | 40                 | Y                                               | 6                               |

This is a background material sample that was taken for lab analysis to build a correlation dataset between the lab Ge detector and the Nal based FIDLER used with the URSA in-situ. The Pu-239 and Am-241 identification appear to be misidentifications based on Notes 4 and 6. The U-238 identification appears to be part of the ambient background based on Note 1. The maximum number of counts collected at a single energy after background subtraction was 75 (0.8 cpm).

" dpm = disintegrations per minute.

<sup>19</sup> ID Type = Identification type. The energy-based identification compares known and observed gamma energy peaks within a given resolution (in this analysis +/- 6 keV). The full-width half-maximum (FWHM) identification applies the additional criteria that the FWHM must be less than 10% for the primary peak and 20% for the confirmatory peak before the observed peaks are compared to the known peaks.

<sup>e'</sup> keV = kiloelectron volts.

<sup>d;</sup> dpm/100cm<sup>2</sup> = disintegrations per minute per 100 square centimeters

"The upper bound peak activity is a conservative estimate of the surficial activity for the identified radionuclide based on the energy peak activity determined by the analysis software plus 50 percent.

<sup>6</sup> DCGL<sub>w</sub> = Derived Concentration Guideline Limit; from Table 4.1 in the text.

<sup>#</sup> NA = not applicable.

<sup>b</sup> Please refer to Section 0.7 in the Appendix O text for the analysis notes.

#### **APPENDIX P**

#### Building Diagrams for Class I and Class II Survey Units

#### Building 803

- Room 1
- *Room 2*
- *Room 3*
- Room 4
- Room 5
- *Room 6*
- Room ~

#### Building 804

- Room I
- *Room 2*
- *Room 3*
- Room 4
- Room 5

#### • Room 6

#### Building 805

• Room 1

#### Building 806

• Room l

#### Building 810

Room 1

#### Building 809

### Room 1

- Building 812
- Room 32

## Building 815

#### Room 1

- *Room 2*
- *Room 3*
- Room 4
- Room 5
- *Room* 6
- Room 7
- Room 8
- *Room 9*
- Room 10
- Room 11
- Room 12
- Room 13
- Room 14
- Room 15
- Room 16

#### Building 816

- *Room 2*
- Room 3
- Room 4
- Room 5
- Room ~
- Room 8
- *Room 9*
- Room 10
- Room 11
- Room 12
- Room 13

#### Building 819

- Room 1
- Room 2
- Room 4
- Room 5
- Room 6 A & B
- Room 7
- Room 8.4 & B
- Room 9
- Room 10
- Room 11
- Room12 A, B, C, &D



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#### NOTE:

- <u>CLASS DNE ROOM</u> <u>2m x 2m grids, 100% COVERAGE</u> • FLOOR
- VALL SURFACES BELDW 2 METERS
- UNEARTHEN RODES WITH DUCTS
- •EXTERIOR BUILDING SURFACES 2N FROM ACCESS HORIZONTAL SURFACES ABUVE 2N ABUVE FLOOR WHERE DUST OR PARTICLES VOULD DEPOSIT

1m × 1m GRIDS, 10% CO∨ERAGE • CEILING (SUSPENDED AND NONSUSCENDED) • UPPER WALLS (ABOVE 2m)





CEILING



BUILDING INFORMATION REFERENCED FROM BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-300, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 9/5/58.



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<u>CLASS ONE ROOM</u> 2m x 2m gRIDS, 100% COVERAGE • FLOOR

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- WALL SURFACES BELOW 2 HETERS
- UNEARTHEN ROOFS WITH DUCTS
- EXTERIOR BUILDING SURFACES 2m FROM ACCESS HORIZONTAL SURFACES ABOVE 2m ABOVE FLOOR WHERE DUST OR PARTICLES VOULD DEPOSIT.

1m × 1m GRIDS, 10% COVERAGE • CEILING (SUSPENDED AND NONSUSTENDED) • UPPER WALLS (ABOVE 2m)

DODRVAY (IF DODR PRESENT, CLOSE AND TREAT AS VALL)

MALL 14 NORTH

|                                       | FEET                              | 0             | 3             |                           | 6       |
|---------------------------------------|-----------------------------------|---------------|---------------|---------------------------|---------|
|                                       | METERS                            |               | 1             |                           | 2       |
|                                       |                                   | 0             | 2'            | 4'                        | 6'      |
|                                       |                                   | (,            | APPROX. S     | CALE FT.)                 |         |
|                                       |                                   |               |               |                           |         |
|                                       | PARSONS ENGINEERING SCIENCE, INC. |               |               |                           |         |
|                                       | CLIENT/PROJECT TITLE              |               |               |                           |         |
|                                       | S                                 | ENECA         | ARMY D        | EPOT A                    | CTIVITY |
| VENCED FROM                           | DCPT                              | ENVIRONALENT. | AL ENGINEERIN | D+0 10.<br>7 <b>500</b> 4 | 701001  |
| G ENGINEERS.<br>1955.<br>UILT 9/5/58. | BUILDING 803<br>ROOM 803-3        |               |               |                           |         |
|                                       | SCALE                             | AS NOTED      | DATE          | ANUARY SOOO               | RE V    |

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NOTE: CLASS ONE ROOM 2m x 2m GRIDS, 100% COVERAGE • FLOOR • VALL SURFACES BELOV 2 METERS • UNEARTHEN ROOFS VITH DUCTS • EXTERIOR BUILDING SURFACES 2m FROM ACCESS • MORIZONTAL SURFACES ABOVE 2m ABOVE FLOOR VHERE DUST OR PARTICLES VOULD DEPOSIT. Im x 1m GRIDS, 10% COVERAGE • CEILING (SUSPENDED AND NONSUSCENDED) • UPPER VALLS (ABOVE 2m) DOORVAY (IF DOOR PRESENT, CLOSE AND TREAT AS VALL)

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NDTE(S):

| BUILDING IN | FORMATION REFERENCED FROM   |
|-------------|-----------------------------|
| BLACK & VI  | EATCH CONSULTING ENGINEERS. |
| DRAWING NO  | ], Y2-300, MAY 2, 1955.     |
| REVISED RE  | ECORD WORK AS-BUILT 9/5/58. |

| FEET<br>METERS | 0 3         | <u>6</u><br>2    |             |  |  |  |  |  |  |
|----------------|-------------|------------------|-------------|--|--|--|--|--|--|
| 0              | 2'          | 4'               | 6'          |  |  |  |  |  |  |
| (              | APPROX.     | SCALE FT         | .>          |  |  |  |  |  |  |
| PARSONS        |             |                  |             |  |  |  |  |  |  |
| PARSONS        | ENGINE      | ERING SC         | IENCE, INC. |  |  |  |  |  |  |
| SENECA         | ARMY        | DEPOT            | ACTIVITY    |  |  |  |  |  |  |
|                | AL ENGINEER | Dig No<br>Dig 73 | 0047-01001  |  |  |  |  |  |  |
|                | BUILDI      | NG 803           | 3           |  |  |  |  |  |  |
|                | ROOM        | 803-7            |             |  |  |  |  |  |  |
|                | DATE        | FEBRUARY 2       | 000 A       |  |  |  |  |  |  |

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NOTE(S):





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<u>ROOM 804-6B</u>

NOTE(S):

ROOM 804-6A

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BUILDING INFORMATION REFERENCED FROM BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-955, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58. CAMPBELL DESIGN ARCH./ENG. PLANNERS FLOOR PLANS, DETAIL & SCHEDULES DRAWING NO. 10-87, SHEET M-1, PR. NO. 52-85, DATE: FEB. 18, 87.

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VALL

VEST



CEILING

ROOM\_805-1

NOTE(S):



## NOTE:



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- WALL SURFACES BELOW 2 METERS
- . UNEARTHEN RODES WITH DUCTS

• EXTERIOR BUILDING SURFACES 2m FROM ACCESS • MORIZONTAL SURFACES ABOVE 2m ABOVE FLOOR WHERE DUST OR PARTICLES YOULD DEPOSIT.

1m × 1m GRIDS, 10% COVERAGE •CEILING (SUSPENDED AND NONSUSCENDED) • UPPER WALLS (ABOVE 2m)



DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)

| FEE<br>MET         | T 0<br>ERS 0 | 3           | 2           |  |  |  |  |  |  |  |
|--------------------|--------------|-------------|-------------|--|--|--|--|--|--|--|
|                    |              |             |             |  |  |  |  |  |  |  |
| 0                  | 4'           | 8'          | 12'         |  |  |  |  |  |  |  |
| (                  | APPROX. S    | CALE FT.    | .>          |  |  |  |  |  |  |  |
| PARSO              | PARSONS      |             |             |  |  |  |  |  |  |  |
| PARSONS            | ENGINE       | AING SC     | IENCE, INC. |  |  |  |  |  |  |  |
| CLIENT/PROJECT TIT | .ε           |             |             |  |  |  |  |  |  |  |
| SENECA             | ARMY         | DEPOT       | ACTIVITY    |  |  |  |  |  |  |  |
|                    |              |             |             |  |  |  |  |  |  |  |
| DE P T             | TAL ENGINEER | NG 75K      | 0047-01001  |  |  |  |  |  |  |  |
|                    | BUILDING 805 |             |             |  |  |  |  |  |  |  |
|                    | ROOM 805-1   |             |             |  |  |  |  |  |  |  |
| 50415              | IDATE        |             | ler v       |  |  |  |  |  |  |  |
| AS NOTED           | DATE         | DECK/ORD 11 | 990 Â       |  |  |  |  |  |  |  |

BUILDING INFORMATION REFERENCED FROM BUILDING INFURMATION REFERENCED FROM BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-855, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58. CAMPBELL DESIGN ARCH./ENG. PLANNERS FLODR PLANS, DETAIL & SCHEDULES DRAWING NO. 10-87, SHEET M-1, PR. NO. 52-85, DATE: FEB. 18, 87.





Note

<u>CLASS II ROOM</u> 2m\_X\_2m\_GRIDS, 50%\_COVERAGE

FLOOR WALL SURFACES BELOW 2m. ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS II SURVEY UNIT. INTERIOR HORIZONTAL SURFACES ABOVE 2m.

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1m X 1m GRIDS, 10% COVERAGE

CEILING (SUSPENDED AND NONSUSPENDED). UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE). ROOFS



CEILING



|     |    |   |        |    |    |   |          |    |    |    |    | 1  | ·        |      |    |    |    |   |    | T  |   |     |                                     |                          |                   |
|-----|----|---|--------|----|----|---|----------|----|----|----|----|----|----------|------|----|----|----|---|----|----|---|-----|-------------------------------------|--------------------------|-------------------|
|     |    |   |        |    |    |   | 44       |    |    |    |    |    |          | 46   |    |    |    |   |    |    | - |     |                                     |                          |                   |
|     |    |   |        |    |    |   |          |    |    |    | 45 |    |          |      | 47 |    |    |   |    |    | - |     |                                     |                          |                   |
|     |    |   |        |    |    |   |          |    |    |    |    |    |          |      |    |    |    |   |    |    | - |     |                                     |                          |                   |
|     |    |   | ,<br>- | ι  |    |   |          |    | 43 |    |    |    |          |      |    |    | 48 |   |    |    | _ |     |                                     |                          |                   |
|     |    |   |        |    |    | 2 | 7        |    |    | â  | 28 |    |          | 2    | 29 |    |    | 3 | 0  |    |   |     |                                     |                          |                   |
| . [ |    |   |        |    | 68 |   |          |    |    |    |    |    |          |      |    |    |    |   |    |    |   |     |                                     |                          | Γ                 |
|     |    |   |        |    |    |   |          |    |    |    | 7  |    |          |      | 12 |    |    |   | 17 |    |   | 31  | 49                                  |                          |                   |
|     |    |   |        |    |    |   |          | 3  |    |    |    |    | 8        |      |    |    | 13 |   |    | 18 |   | 32  |                                     |                          |                   |
|     |    |   |        |    | 26 |   |          | Ū  |    |    |    |    | 0        |      |    |    | 10 |   |    |    |   |     |                                     | 51                       |                   |
|     |    |   |        |    | 20 |   |          |    |    |    |    |    |          |      |    |    |    |   |    |    |   |     |                                     |                          |                   |
|     |    |   |        | 42 |    |   |          |    |    | (  | 6  |    |          |      | 11 |    |    |   | 16 |    |   |     |                                     |                          |                   |
|     | 40 | 4 | 1      |    |    |   |          |    |    |    |    |    |          |      |    |    |    |   |    |    |   | ( ) |                                     |                          |                   |
|     |    | 3 | 9      |    |    | 1 |          | 4  |    |    |    |    | 9        |      |    |    | 14 |   |    | 19 |   | 67  |                                     |                          |                   |
|     |    |   |        |    | 25 |   |          |    |    |    | 5  |    | <u> </u> |      | 10 |    |    |   | 15 |    |   |     |                                     |                          |                   |
| -   |    |   |        |    |    |   | ć        | 24 |    |    | i  | 23 |          |      | 2  | 2  |    |   | 2  | 1  |   |     | ha <u>n</u>                         |                          |                   |
|     |    |   |        |    |    |   |          |    |    |    |    |    | 36       | L    |    |    |    |   |    |    |   |     |                                     |                          |                   |
|     |    |   |        |    |    |   |          |    |    | 37 |    |    |          |      |    |    | 33 |   |    |    |   |     |                                     |                          |                   |
|     |    |   |        |    |    |   | <u> </u> | ļ  |    |    |    |    |          | 35   |    | 34 |    |   |    |    | _ |     |                                     |                          |                   |
|     |    |   |        |    |    |   |          |    | 38 |    | 1  |    | BLDG. 81 | 10-1 |    |    |    |   |    |    |   |     | E(S):<br>LACK L<br>LAN L<br>DATE: N | VEACH<br>ELEVA<br>Y 2, 1 | 1 C<br>TID<br>955 |

Note

CLASS IVE REEM 2m X 2m GRIDS. 50% N FLOOR

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VALL SURFACES BELOV 2m ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT. INTERIOR HORIZONTAL SURFACES ABOVE 2m. In X In GRIDS. 10% COVERAGE

CEILDNG (SUSPENDED AND NONSUSPEENDED) UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) ROOFS





|  |      |    |    |    |    | <br>• · · · · · · · · · · · · · · · · · · · |    |    |    |    | M |  |
|--|------|----|----|----|----|---------------------------------------------|----|----|----|----|---|--|
|  |      |    |    |    |    |                                             |    |    |    |    |   |  |
|  |      |    |    |    |    |                                             |    |    |    |    |   |  |
|  | 64   | 63 |    | 65 | 66 |                                             |    |    |    |    |   |  |
|  |      |    |    |    |    |                                             |    |    |    |    |   |  |
|  |      |    |    |    |    | 60                                          | 59 |    | 58 | 57 |   |  |
|  |      |    |    |    |    |                                             |    |    |    |    |   |  |
|  | 62   | 61 |    |    |    |                                             |    |    |    |    |   |  |
|  |      |    | 55 |    |    |                                             |    | 54 |    |    |   |  |
|  |      | 67 |    |    |    |                                             |    | 53 |    |    |   |  |
|  | <br> | L  | L  | L  |    | <br>                                        |    |    |    |    |   |  |

ELDG. 810-1 CEILING

NOTE(S): <u>IL(S):</u> BLACK & VEACH CONSULTING ENGINEERS PLAN & ELEVATIONS DRAVING NO. Y2-359, DATE: MAY 2, 1955. VENTILATION & AIR CONDITIONING SYSTEM DRAWING NO. 24-71, PR4-71, DATE DOCT. 21, 1971. BLACK & VEACH CONSULTING ENGINEERS REVISION RECORD WORK AS-BUILT JUNE 2, 1958. DRAVING NO. Y2-625. GALSON & GALSON CONSULTING ENGINEERS, FLOOR PLAN MECHANICAL, DRAVING NO. 26-688, SHEET NO. 5 DF 6, PR. NO. 35-86, DATE: MAY 12, 1988.

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Note

<u>CLASS II ROOM</u> 2<u>n X 2n GRIDS, 100% COVERAGE</u>



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PLORE VALL REFACES BLOW BH ACCESS MERITS TO A DETINCE OF BH SCYORE CLARE THE BLOWER WERE DETENDED HEREDHILL SHIFTLES AND/C BH. In X In GRIDS. 10% COVERAGE

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| FRI<br>ME | T 0<br>TERS 0              | 3      | 8            |  |  |  |  |  |  |
|-----------|----------------------------|--------|--------------|--|--|--|--|--|--|
| 0         | 41                         | 87     | 12           |  |  |  |  |  |  |
|           | (APPREX. S                 | CALE F | c)           |  |  |  |  |  |  |
| P         | P                          |        |              |  |  |  |  |  |  |
| PAREO     |                            |        | CIENCE, INC. |  |  |  |  |  |  |
| SENE      | SENECA ARMY DEPOT ACTIVITY |        |              |  |  |  |  |  |  |
|           | MERTAL EXCERCE             | Deg.   | 780047-01001 |  |  |  |  |  |  |
|           | BUILDING 810               |        |              |  |  |  |  |  |  |
|           | ROOM 810-1<br>CEILING      |        |              |  |  |  |  |  |  |
| AR NOT    |                            | -      | 100 A        |  |  |  |  |  |  |



| 23 |    |    |
|----|----|----|
|    |    |    |
|    |    | 55 |
|    |    |    |
|    | 21 |    |





NOTE(S): ALL DOORS ARE 2M HIGH

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### NOTE:

- <u>CLASS IWO ROOM</u> 2m x 2m GRIDS, 50% COVERAGE
- FLOOR
- WALL SURFACES BELOW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.
- . INTERIOR HORIZONTAL SURFACES ABOVE 2m.
- 1m × 1m GRIDS, 10% COVERAGE
- CEILING (SUSPENDED AND NONSUSPENDED)
- UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) • ROOF S



DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)



FEET 0 3

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BUILDING INFORMATION REFERENCED FROM OFFICE OF POST THE ENGINEER DRAWING NO. 14-76, JULY 19, 1976. HIBBARD-ENGINEERS DRAWING NO. 20-80, SHEET NO. 1-10, DATE 5/16/80. ROBSON & WOESE INC. CONSULTING ENGINEERS DRAWING NO. M/E-1, SHEET NO. 1 OF 4, DATE AUG. 6, 1986.



### NOTE.

<u>CLASS TWO ROOM</u> 2m x 2m <u>GRIDS, 50% COVERAGE</u>

- FLCOR
- VALL SURFACES BELOW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2- BEYOND CLASS TWO SURVEY UNIT.
- . INTERIOR HORIZONTAL SURFACES ABOVE 25

# 1m x 1m GRIDS, 10% COVERAGE

- CEILING (SUSPENDED AND NONSUSPENDED)
- UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE)
- ROOFS

DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)



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ROOM 815-3

NUTE(S): BUILDING INFO OFFICE OF PO DRAWING NO. 1 HIBBARD-ENGIN SHEET NO. 1-11 ROBSON & WOE DRAWING NO. N DATE AUG 6 DATE AUG. 6,



## NOTE:

CLASS TWO ROOM 2m x 2m GRIDS, 50% COVERAGE • FLOOR

- WALL SURFACES BELDW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS
- TWO SURVEY UNIT.
- INTERIOR HORIZONTAL SURFACES ABOVE 2m.

### 1m × 1m GRIDS, 10% CO∨ERAGE

- · CEILING (SUSPENDED AND NONSUSPENDED)
- UPPER WALLS (ABOVE 2n ABOVE FLOOR SURFACE)
- RDDFS

DODRWAY (IF DODR PRESENT, CLOSE AND TREAT AS WALL)

|                                                                                                          | 0 4' 8' 12'<br>CAPPROX. SCALE FT.)       |  |  |  |  |
|----------------------------------------------------------------------------------------------------------|------------------------------------------|--|--|--|--|
|                                                                                                          | PARSONS                                  |  |  |  |  |
|                                                                                                          | PARSONS ENGINEERING SCIENCE, INC.        |  |  |  |  |
| TE(S):                                                                                                   | CLIENT/PROJECT TITLE                     |  |  |  |  |
| BUILDING INFORMATION REFERENCED FROM<br>OFFICE OF POST THE ENGINEER<br>DRAWING ND. 14-76, JULY 19, 1976. | SENECA ARMY DEPOT ACTIVITY               |  |  |  |  |
| SHEET ND. 1-10. DATE 5/16/80.                                                                            | DEPT DISCHARTAL ENGINEERING 730047-01001 |  |  |  |  |
| RDBSDN & WOESE INC. CONSULTING ENGINEERS<br>DRAWING NO. M/E-1, SHEET NO. 1 DF 4,<br>DATE AUG. 6, 1986.   | BUILDING 815<br>ROOM 815-3               |  |  |  |  |
| ②IS THE COUNTERTOP FOR THE COUNTER<br>GRID①                                                              | SCALE AS NOTED DATE AUGUST 2001 B        |  |  |  |  |
|                                                                                                          |                                          |  |  |  |  |

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ROOM 815-4

NDTE(S):

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### NOTE:

- CLASS TWO ROOM 2m x 2m GRIDS, 50% COVERAGE
- + FLOOR
- VALL SURFACES BELOV 2 METERS
- ACCESS POINTS TO A DISTANCE OF 25 BEYOND CLASS
- TWO SURVEY UNIT.
- . INTERIOR HORIZONTAL SURFACES ABOVE 2m.

<u>1m x 1m GRIDS, 10% COVERAGE</u> • CEILING (SUSPENDED AND NONSUSPENDED)

- UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) • ROOF S



DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)






N□TE(S): BUILDING INFORMATION REFERE OFFICE OF POST THE ENGINEE DRAVING NO. 14-76, JULY 19, HIBBARD-ENGINEERS DRAVING SHEET NO. 1-10, DATE 5/16/80 ROBSON & WDESE INC. CONSUL DRAVING NO. M/E-1, SHEET NO DATE AUG. 6, 1986.

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NOTE:

## <u>CLASS TWO ROOM</u> 2m × 2m GRIDS, 50% COVERAGE

- FLOOR
- WALL SURFACES BELDW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT. . INTERIOR HORIZONTAL SURFACES ABOVE 2m.

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- In x In GRIDS, 10% COVERAGE •CEILING (SUSPENDED AND NONSUS(ENDED) •UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) • R00FS

DOORVAY (IF DOOR PRESENT, CLOSE AND TREAT AS VALL)

|                                 | METERS 0 1 2                       |
|---------------------------------|------------------------------------|
|                                 | 0 4' 8' 12'                        |
|                                 | (APPROX. SCALE FT.)                |
|                                 | PARSONS                            |
|                                 | PARSONS ENGINEERING SCIENCE, INC.  |
|                                 | SENECA ARMY DEPOT ACTIVITY         |
| RENCED FROM<br>IER<br>1976      | DEPT 3+g %o                        |
| ND. 20-80,<br>80.               | BUILDING 815                       |
| JLTING ENGINEERS<br>NO. 1 OF 4, | ROOM 815-6                         |
|                                 | SCALE AS NOTED DATE NOVELEBER 1999 |

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NOTE(S):

NOTE:

## CLASS TWO ROOM

2m x 2m GRIDS, 50% COVERAGE

- FLOOR
- WALL SURFACES BELOW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.

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. INTERIOR HORIZONTAL SURFACES ABOVE 2m.

Im x Im GRIDS, 10% COVERAGE +CEILING (SUSPENDED AND NONSUS(ENDED)

- UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE)
- ROOFS

DODRVAY (IF DOOR PRESENT, CLOSE AND TREAT AS VALL)







ROOM 815-8



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NOTE:

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## <u>CLASS TWO ROOM</u> <u>2m × 2m grids, 50% Coverage</u> • FLOOR

- VALL SURFACES BELOV 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.

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- . INTERIOR HORIZONTAL SURFACES ABOVE 2m.

I<u>m x Im GRIDS, 10% COVERAGE</u> •CEILING (SUSPENDED AND NONSUSCENDED)

• UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) • ROOFS

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DODRWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)



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15 14 BU CEILING

**V**DRTH



ROOM 815-9

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- <u>CLASS TWO ROOM</u> <u>2m x 2m GRIDS, 50% COVERAGE</u>
- . FLOOR
- WALL SURFACES BELOW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.
- INTERIOR HORIZONTAL SURFACES ABOVE 25
- 1m × 1m GRIDS, 10% COVERAGE
- CEILING (SUSPENDED AND NONSUSPENDED)
- UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE)
- ROOFS

DODRWAY (IF DODR PRESENT, CLOSE AND TREAT AS WALL)



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ROOM 815-10



NOTE:

# <u>CLASS TWO ROOM</u> 2m x 2m GRIDS, 50% COVERAGE

- FLOOR
- VALL SURFACES BELOV 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS
   TVO SURVEY UNIT.

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• INTERIOR HORIZONTAL SURFACES ABOVE 2n.

<u>1m x 1m GRIDS, 10% COVERAGE</u> •CEILING (SUSPENDED AND NONSUSIENDED) • UPPER VALLS (ABOVE 2m ABOVE FLOOR SURFACE) • ROOF S

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DODRVAY (IF DODR PRESENT, CLOSE AND TREAT AS VALL)

|                                                        | FEET 0 3 8<br>METERS 0 1 2                       |
|--------------------------------------------------------|--------------------------------------------------|
|                                                        | 0 4' 8' 12'                                      |
|                                                        | (APPRDX. SCALE FT.)                              |
|                                                        | PARSONS                                          |
|                                                        | PARSONS ENGINEERING SCIENCE, INC.                |
|                                                        | SENECA ARMY DEPOT ACTIVITY                       |
| IDN REFERENCED FROM<br>HE ENGINEER<br>, JULY 19, 1976. | 0€07<br>ENVIRONALENTAL ENGLICENERIA 750047-01001 |
| : DRAWING ND. 20-80,<br>TE 5/16/80.                    | BUILDING 815                                     |
| NC, CONSULTING ENGINEERS<br>, SHEET NO. 1 OF 4,        | ROOM 815-10                                      |
|                                                        |                                                  |

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ROOM\_815-11



NOTE(S):

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NOTE:

### CLASS TWO ROOM

2m x 2m GRIDS, 50% COVERAGE

- FLOOR
- VALL SURFACES BELOW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.

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● INTERIOR HORIZONTAL SURFACES ABOVE 2n.

In x In GRIDS, 10% COVERAGE •CEILING (SUSPENDED AND NONSUSCENDED)

- UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE)
- RODES

DODRWAY (IF DODR PRESENT, CLOSE AND TREAT AS WALL)



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EAST WALL

ROOM 815-12

NOTE(S):

BULDING INFORMAT DFFICE OF POST T DRAWING NO. 14-76 HIBBARD-ENGINEER SHEET NO. 1-10, DA ROBSON & WOESE DRAWING NO. M/E-DATE AUG. 6, 1986

EAST WALL, WHICH WAS SURVEYED DUR

|              | ~   | m     | 12 |  |
|--------------|-----|-------|----|--|
| - <b>N</b> i | ( 1 | 1 I I | ъ. |  |
| 1.4          | v   | 4     | 24 |  |

CLASS TWO ROOM

2m x 2m GRIDS, 50% COVERAGE

- FLOOR
- WALL SURFACES BELDW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.
- INTERIOR HORIZONTAL SURFACES ABOVE 2m.
- 1m x 1m GRIDS, 10% COVERAGE
- CEILING (SUSPENDED AND NONSUSPENDED)
- UPPER WALLS (ABOVE 2= ABOVE FLOOR SURFACE) ● RODF S



. DODRVAY (IF DODR PRESENT, CLOSE AND TREAT AS WALL)

|                                                             | FEET 0 3 6<br>METERS 0 1 2             |
|-------------------------------------------------------------|----------------------------------------|
|                                                             | 0 6' 12' 18'                           |
|                                                             | (APPROX. SCALE FT.)                    |
|                                                             | PARSONS                                |
|                                                             | PARSONS ENGINEERING SCIENCE, INC.      |
|                                                             | ILIEN' PROJECT TILE                    |
| NTION REFERENCED FROM<br>THE ENGINEER<br>76, JULY 19, 1976. | SENECA ARMY DEPOT ACTIVITY             |
| RS DRAWING ND. 20-80,<br>DATE 5/16/80.                      | ENVIRONMENTAL ENGINEERING 730047-01001 |
| INC. CONSULTING ENGINEERS                                   | BUILDING 815                           |
| 6.                                                          | ROOM 815-12                            |
| CONNECTS TO HOTROOM,<br>URING PHASE I.                      | AS NOTED                               |



NOTE:

# <u>CLASS TWO ROOM</u> 2m × 2m GRIDS, 50% COVERAGE

- FLOOR
- VALL SURFACES BELOV 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.

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● INTERIOR HORIZONTAL SURFACES ABOVE 2m.

<u>1m x 1m GRIDS, 10% COVERAGE</u> •CEILING (SUSPENDED AND NONSUS[ENDED)

- UPPER WALLS (ABOVE 2n ABOVE FLOOR SURFACE) RODF'S

DOORVAY (IF DOOR PRESENT, CLOSE AND TREAT AS VALL)



|           |     |      |    |    |      | ·  |      |    |     |      |      |      |            |     |      |     |      |      | N                                                                                                 | <u> </u>                                                                            |                                                                        |                                                   |                                | E:<br><u>A 2 PLDDR</u><br>VALL SURV<br>INTERIOR<br>A 2005<br>INTERIOR<br>A 10 GRI<br>CELLING SA<br>RODFS | TWD R<br>n GRI<br>FACES E<br>DINTS TI<br>EY UNIT.<br>HORIZON<br>HORIZON<br>SUSPENDE<br>LLS (AB | ROOM<br>DS, 507<br>BELOV 2 N<br>O A DISTA<br>TAL SURF.<br>COVERAGE<br>BOVE 2M A | COV<br>AETERS<br>INCE OF<br>ACES AB<br>E<br>DINSUSCEN<br>ABOVE FI |
|-----------|-----|------|----|----|------|----|------|----|-----|------|------|------|------------|-----|------|-----|------|------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------|
|           |     |      |    |    |      |    | L.   |    |     |      |      |      |            |     |      |     |      |      |                                                                                                   |                                                                                     |                                                                        |                                                   |                                |                                                                                                          | WAY<br>IOOR PRE                                                                                | ESENT, CLI                                                                      | DSE AND                                                           |
|           | Θ   | (6)  | 78 | 6  |      |    |      | 69 |     |      |      | (7)  |            | 7   |      |     |      | (7)  |                                                                                                   |                                                                                     |                                                                        |                                                   | (73                            |                                                                                                          |                                                                                                | (76)                                                                            | E                                                                 |
|           |     | ()   |    |    | @    |    |      |    |     |      | (6)  |      |            |     |      |     |      |      |                                                                                                   |                                                                                     | 39                                                                     |                                                   |                                |                                                                                                          |                                                                                                | 59                                                                              |                                                                   |
| <b></b>   | (E) | (56) |    |    | (55) |    | (54) |    | (3) |      | (52) |      | <u>sı)</u> |     | 50)  | (   | **   |      | (48)                                                                                              |                                                                                     | (47)                                                                   |                                                   |                                | (46)                                                                                                     |                                                                                                |                                                                                 | ۶<br>                                                             |
| (80) (79) | (1) | 3    | 0  | 3  | 6    | 0  |      | 9  |     | (II) | 12   | (13) |            | (1) | (16) | (1) | (18) | (19) |                                                                                                   |                                                                                     | a)                                                                     | 2                                                 | 8                              |                                                                                                          |                                                                                                | (25)                                                                            |                                                                   |
|           | 39  | 37   |    | 35 |      | 35 |      | 34 |     | 33   |      | 32)  |            | 31  |      | 30  |      | (2)  |                                                                                                   | (                                                                                   | 28                                                                     |                                                   | 27                             |                                                                                                          |                                                                                                | (26)                                                                            |                                                                   |
|           | (9) |      |    |    | (40) |    |      |    |     | (41) |      |      |            | 42  |      |     |      |      |                                                                                                   | (43)                                                                                |                                                                        |                                                   |                                |                                                                                                          | •                                                                                              |                                                                                 |                                                                   |
|           |     |      |    |    |      |    |      |    |     |      |      |      |            |     |      |     |      |      | <u>(S):</u><br>JILDING II<br>FICE OF<br>RAWING NI<br>BBARD-EN<br>HEET NO.<br>JBSON &<br>RAWING NI | INFORMATI<br>POST TH<br>NO. 14-76,<br>NGINEERS<br>1-10, DAT<br>WOESE IN<br>WOESE IN | DN REFER<br>E ENGINEE<br>JULY 19,<br>DRAWING<br>IC. CDNSUL<br>SHEET NI | ENCED<br>ER<br>NO. 20<br>0.<br>LTING E<br>0. 1 OF | FROM<br>-80,<br>Engineer<br>4, | (<br> <br>                                             |                                                                                                | FEET<br>METERS<br>6'<br>CAPPRO<br>ONS ENG<br>CONSTANCE<br>ECA AR<br>BU<br>RO    | 0 3<br>0 3<br>X. SCAL<br>MY D<br>MY D<br>JILDIN<br>DOM 8          |

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ERAGE

- 2m BEYOND CLASS

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DVE 2m.

DED) LOOR SURFACE)

TREAT AS VALL)







NOTE:

# <u>CLASS DNE ROOM</u> 2m x 2m gRIDS, 100% CO∨ERAGE

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- FLOOR
- WALL SURFACES BELOW 2 METERS
- . UNEARTHEN RODFS WITH DUCTS
- EXTERIOR BUILDING SURFACES 2m FROM ACCESS •HORIZONTAL SURFACES ABOVE 2m ABOVE FLOOR WHERE DUST OR PARTICLES WOULD DEPOSIT.

### 1m x 1m GRIDS, 10% COVERAGE • CEILING (SUSPENDED AND NONSUSCENDED)

• UPPER WALLS (ABOVE 2m)





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BUILDING INFORMATION REFERENCED FROM OFFICE OF POST THE ENGINEER DRAWING NO. 14-76, JULY 19, 1976. HIBBARD-ENGINEERS DRAWING NO. 20-80, HIBBARD-CHOUNCERS DRAWING NU. 20-80, SHEET NO. 1-10, DATE 5/16/80. ROBSON & WOESE INC. CONSULTING ENGINEERS DRAWING NO. M/E-1, SHEET NO. 1 OF 4, DATE AUG. 6, 1986.



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CEILING



NOTE(S): DATE AUG. 6, 1986. #'S ARE FROM PHASE I)

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<u>CLASS TWD ROOM</u> 2m x 2m GRIDS, 50% COVERAGE • FLOOR

- VALL SURFACES BELOV 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TVD SURVEY UNIT.

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●INTERIOR HORIZONTAL SURFACES ABOVE 2m.

1m × 1m GRIDS, 10% COVERAGE • CEILING (SUSPENDED AND NONSUSPENDED) • UPPER WALLS (ABOVE 2n ABOVE FLOOR SURFACE) • ROOF S

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DOORVAY (IF DOOR PRESENT, CLOSE AND TREAT AS VALL)

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A'

42 (43) (41) • 45 22 23 3  ${}^{\bullet}$ (46)  $\bigcirc$ 3 6 24

30

51

52



EAST WALL

.

21

55

39

VALL

NORTH

39

\_ \_ \_ \_ \_ \_ \_ \_



VALL

SDUTH

49

WEST WALL

54

**33** 

ROOM 816-1

NOTE(S):

NOTE:

<u>CLASS IWO ROOM</u> <u>2m × 2m GRIDS, 50% COVERAGE</u>

- FLDOR
- WALL SURFACES BELOW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2h BEYOND CLASS

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TWO SURVEY UNIT. . INTERIOR HORIZONTAL SURFACES ABOVE 2m.

- IM X IM GRIDS. 10% COVERAGE •CEILING (SUSPENDED AND NONSUSCENDED)
- UPPER WALLS (ABOVE 2n ABOVE FLOOR SURFACE)
- ROOF S

DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)

- 32 = COLUMN IN CENTER OF ROOM 33 = TOP SHELF OF DEST 34 = MAIN DESK TOP 35 = BOTTEM SHELF OF DESK

| <br> | _  |    |    | _  |    | _ | -  |     |
|------|----|----|----|----|----|---|----|-----|
| ;    | 61 |    |    | 65 |    |   |    |     |
|      |    |    |    |    |    |   |    |     |
| •    |    |    |    |    |    |   |    |     |
|      |    | 69 |    |    |    |   |    | НТ  |
|      |    |    |    |    |    |   |    | SDU |
|      |    |    |    |    | 66 |   |    |     |
|      |    |    | 64 |    |    |   |    |     |
|      |    |    |    |    |    |   | 62 |     |
| 67   |    |    |    |    |    |   |    |     |
|      |    |    |    |    |    |   |    |     |

CEILING WALL



|          |          |           |            |      |      |      |       | EAS    | WALL  |      |      |       |               |          |       |      |   |
|----------|----------|-----------|------------|------|------|------|-------|--------|-------|------|------|-------|---------------|----------|-------|------|---|
|          |          |           |            |      |      |      |       | (100), |       |      | 1    |       | ]             |          |       |      |   |
|          |          |           |            |      |      |      |       |        | 101)  | 9B   | 1    |       |               |          |       |      |   |
|          |          |           |            |      |      |      |       | 102    |       |      |      |       |               |          |       |      |   |
|          |          |           |            |      |      | (99) |       |        | 97    |      |      |       | -             |          |       |      |   |
|          |          |           |            |      | 69   | - N  | 70    |        | (71)  |      | 72   | 73    |               |          |       |      |   |
|          |          |           |            |      |      | 4    |       | 3      |       | 2    |      | 1     | (53)          | (i)      |       |      |   |
|          |          | 4         |            | (99) | 5    |      | 6     |        | 7     |      | 8    |       |               |          | (ā)   |      |   |
|          | EZ       |           | 8          |      |      | (12) |       | 11     |       | (10) |      | 9     | (5 <u>4</u> ) |          |       |      | - |
|          |          |           |            | 67   | (13) |      | (14)  |        | (15)  |      | (16) |       |               |          |       | Cos  | ( |
|          |          |           | (20)       |      | (19) |      | (18)  |        | (17)  | (3)  |      |       |               |          |       |      |   |
| STH VALL |          | (2)       |            | 66   | (21) |      | (22)  |        | (23)  |      | (24) |       |               | (10)     |       |      |   |
| NDR      | 6        |           |            |      |      | (28) |       | (27)   |       | (26) |      | (25)  | 56            |          | (108) | (09) |   |
|          |          |           |            | 65   | (29) |      | 30    |        | 31    |      | (32) |       |               |          |       |      |   |
|          | 91       |           | 81         |      |      | 36   |       | (35)   |       | 34)  |      | 33    | (57)          |          |       |      |   |
|          |          | (11)      |            | (Å)  | 37   |      | 38)   |        | 39    |      | 40   |       |               | (10)     |       |      |   |
|          |          |           |            |      |      | (44) |       | (43)   |       | 42   |      | (41)  | 58            |          |       |      | ( |
|          |          |           | <u>(1)</u> | (Fg  | 45   | (52) | (46)  | FLOOR  | (47)  | 50   | (4B) | (49)  |               |          |       | (12) |   |
|          | <u> </u> | <u> [</u> | !          |      |      | (3)  |       | (9)    |       | (60) |      | (65)  |               | <u> </u> |       |      | - |
|          |          |           |            |      |      |      |       |        |       |      |      | (152) |               |          |       |      |   |
|          |          |           |            |      |      | 130  |       |        |       |      |      |       |               |          |       |      |   |
|          |          |           |            |      |      |      |       | (158)  |       |      | (150 |       |               |          |       |      |   |
|          |          |           |            |      |      |      | (153) |        | (151) |      |      |       |               |          |       |      |   |

VEST WALL

<u>ROOM 816-3</u>

NDTE(S):

|      |          | <br>  |       |       |       |       | 133   |           |       |       |       | (132) |     |       | (1) |      |
|------|----------|-------|-------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|-----|-------|-----|------|
|      |          |       |       |       | (136) |       |       |           |       |       |       |       |     |       |     |      |
|      |          |       |       | <br>  |       |       |       | <br>      |       | (135) |       |       |     |       |     |      |
|      |          |       |       |       |       |       |       |           |       |       |       |       |     | (161) | 134 |      |
|      |          |       | (142) |       |       |       |       |           |       |       |       |       |     |       |     |      |
|      |          | (151) |       |       |       |       |       |           |       |       |       |       |     |       |     |      |
| т    |          |       |       |       |       |       |       |           |       |       | (143) |       |     |       |     | SC   |
| NDRT | $\vdash$ |       | (146) |       |       | 147   |       | <br>      | (162) |       |       | (144) |     |       |     | JUTH |
|      |          |       |       |       |       |       |       |           |       |       |       |       |     |       |     |      |
|      |          |       |       |       | 148   |       |       |           |       | (145) |       |       |     |       |     |      |
|      | <u> </u> |       |       |       |       |       | (149) |           |       |       |       |       |     |       |     |      |
|      |          |       |       |       |       |       |       | <br>(154) |       |       |       |       | 158 |       |     |      |
|      |          | (150) |       |       |       |       |       |           |       | 165   |       |       |     | (159  |     |      |
|      | 141      |       |       |       | 152   |       | (163) |           | 155   |       |       |       |     |       |     |      |
|      | _        |       |       |       |       | (153) |       | <br>(166) |       |       | (157  | (156) |     |       | 138 |      |
|      |          |       |       |       |       |       |       |           |       |       |       |       |     |       |     |      |
|      | L        |       |       | (164) |       |       | (140) | (139)     |       |       |       | (160) |     |       |     |      |

CEILING

SOUTH

### NOTE:

<u>CLASS TWO ROOM</u> 2m x 2m GRIDS, 50% COVERAGE • FLOOR

- WALL SURFACES BELDW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.
- INTERIOR HORIZONTAL SURFACES ABOVE 2m.

### <u>1m x 1m GRIDS, 10% COVERAGE</u> CEILING (SUSPENDED AND NONSUSPENDED) • UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE)

• ROOF S

DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)

- \* #\$ 74-96 ARE ON TALBES AND CABINETS
- #113 IS ON CENTER SUPPORT COLUMN 2'X2m WIDE (4 SIDES)
- #114 IS ON WEST SUPPORT COLUMN 2'x2m WIDE (4 SIDES)
- \* #S 167 & 168 ARE ON UPPER SUPPORT COLUMN
- \* #S 173-175 ARE 2'x1m
- #S 169-172 ARE DN CRANE RAILS 1'x1m (4 SIDES)

|                                   | FEET         0         3         6           METERS         0         1         2           0         8'         16'         24' |  |  |  |  |  |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
|                                   | (APPROX. SCALE FT.)                                                                                                              |  |  |  |  |  |
| PARSONS                           |                                                                                                                                  |  |  |  |  |  |
| PARSONS ENGINEERING SCIENCE, INC. |                                                                                                                                  |  |  |  |  |  |
|                                   | SENECA ARMY DEPOT ACTIVITY                                                                                                       |  |  |  |  |  |
| D FROM                            |                                                                                                                                  |  |  |  |  |  |
| 20-80.                            | 262***********************************                                                                                           |  |  |  |  |  |
|                                   | BUILDING 816                                                                                                                     |  |  |  |  |  |
| ENGINEERS<br>JF 4,                | ROOM 816-3                                                                                                                       |  |  |  |  |  |
|                                   | 314.5 AS NOTED AUCUST 2001 B                                                                                                     |  |  |  |  |  |

BUILDING INFORMATION REFERENCED OFFICE OF POST THE ENGINEER DRAWING NO. 14-76, JULY 19, 1976. HIBBARD-ENGINEERS DRAWING NO. 20 SHEET NO. 1-10, DATE 5/16/80. ROBSON & WOESE INC. CONSULTING E DRAWING NO. M/E-1, SHEET NO. 1 OF DATE AUG. 6, 1986.



<u>ROOM 816-4</u>

FEET 0 3 6 METERS 0 1 2

## NDTE(S)

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BUILDING INFORMATION REFEREN OFFICE OF POST THE ENGINEER DRAWING NO. 14-76, JULY 19, 1 HIBBARD-ENGINEERS DRAWING N SHEET NO. 1-10, DATE 5/16/80. ROBSON & WOESE INC. CONSULT DRAWING NO M/E-1, SHEET NO. DATE AUG. 6, 1986.

| NOTE                                      |                                                                                                                                                                                                                                    |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | STWORD<br>C 2m GRIDS, 50% COVERAGE<br>R<br>SURFACES BELOW 2 METERS<br>SURVEY UNIT.<br>SURVEY UNIT.<br>SURVEY UNIT.<br>SURVEY CONTAL SURFACES ABOVE 20                                                                              |
|                                           |                                                                                                                                                                                                                                    |
| <u>1m x</u><br>• CEIL<br>• UPPE<br>• RODF | _Im_GRIDS, 10%_CUVERAGE<br>ING (SUSPENDED AND NONSUSPENDED)<br>R valls (above 2m above floor surface)<br>'S                                                                                                                        |
|                                           | CLASS ONE ROOM - SPECIAL<br>2m x 2m GRIDS, 100% COVERAGE<br>•FLOOR<br>•VALL SURFACES (UPPER AND LOWER)<br>•UNEARTHEN RODES WITH DUCTS                                                                                              |
|                                           | • EXTENSION BUILDING SURFACES 2n FROM ACCESS<br>• HORRIZONTAL SURFACES ABOVE 2n ABOVE FLOOR<br>WHERE DUST OR PARTICLES COULD DEPOSIT.<br>• CEILING (SUSPENDED AND NONSUSPENDED)                                                    |
|                                           | DOORWAY<br>(IF DOOR PRESENT, CLOSE AND TREAT AS WALL)                                                                                                                                                                              |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           | 1                                                                                                                                                                                                                                  |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           |                                                                                                                                                                                                                                    |
|                                           | 0 8' 16' 24'                                                                                                                                                                                                                       |
|                                           | (APPROX. SCALE FT.)                                                                                                                                                                                                                |
|                                           | 2                                                                                                                                                                                                                                  |
|                                           | PARSONS<br>PARSONS ENGINEERING SCIENCE, INC.                                                                                                                                                                                       |
|                                           |                                                                                                                                                                                                                                    |
| ENCED FROM                                | SENECA ARMY DEPOT ACTIVITY                                                                                                                                                                                                         |
| ER<br>1976.                               | ENVIRONMENTAL ENGINEERDIG 730047-01001                                                                                                                                                                                             |
| ND. 20-80,<br>0.                          | BUILDING 816                                                                                                                                                                                                                       |
| TING ENGINEERS<br>D. 1 OF 4,              | ROOM 816-4                                                                                                                                                                                                                         |
|                                           | مال المالي ال<br>المالي المالي |



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NOTE: <u>CLASS TWO ROOM</u> 2m x 2m GRIDS, 50% COVERAGE N \_\_\_\_ • FLOOR • WALL SURFACES BELOW 2 METERS ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT. . INTERIOR HORIZONTAL SURFACES ABOVE 2m. 1m × 1m GRIDS, 10% CO∨ERAGE • CEILING (SUSPENDED AND NONSUSPENDED) • UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) ROOF S DODRWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL) \* #11 & #12 ARE ON UNDERSIDE OF SUSPENDED CEILING \* #13 & #14 ARE ON TOP OF SUSPENDED CEILING \* #15 IS ABOVE #13, AND #16 IS ABOVE #14 IN CEILING CAVITY \* #17 & #19 ARE ON BATHROOM STALL WALL NORTH \* #18 IS ON BATHROOM STALL WALL SOUTH \* #20 & #22 ARE ON BATHROOM DOOR EAST SIDE \* #21 IS ON BATHROOM DOOR WEST SIDE \* #23 & 24 ARE AT SINKS \* #25 IS ON SHOWER WALL \* #26 IS ON CABINET AND SHOWER WALL

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|                             | 0                    | 4'             | 81       | 12'         |  |
|-----------------------------|----------------------|----------------|----------|-------------|--|
|                             | A>                   | PPROX. SC      | ALE FT.) |             |  |
|                             | PARS                 | IONS           |          |             |  |
| PARSONS ENGINEERING SCIENCE |                      |                |          |             |  |
|                             | CLIENT/PROJECT TITLE |                |          |             |  |
|                             | SENEC                | A ARMY         | DEPOT    | ACTIVIT     |  |
| м                           |                      |                |          |             |  |
|                             |                      | ENTAL ENGINEER | Deg 1    | 10047-01001 |  |
|                             |                      | BUILDI         | NG 816   | 3           |  |
|                             |                      | ROOM           | 816-5    |             |  |
|                             |                      |                |          |             |  |

BUILDING INFORMATION REFERENCED FROM DFFICE DF POST THE ENGINEER DRAWING NO. 14-76, JULY 19, 1976. HIBBARD-ENGINEERS DRAWING NO. 20-80, SHEET NO. 1-10, DATE 5/16/80. ROBSON & WDESE INC. CONSULTING ENGINEED DRAWING NO. M/E-1, SHEET NO. 1 DF 4, DATE AUG. 6, 1986.

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N☐TE(S): BUILDING INFORMATION & OFFICE OF POST THE EX DRAWING NO. 14-76, JUL HIBBARD-ENGINEERS DRA SHEET NO. 1-10, DATE 5 ROBSON & WDESE INC. O DRAWING NO. M/E-1, SHE DATE AUG. 6, 1986.

| NOTE                                                                             |
|----------------------------------------------------------------------------------|
| CLASS IVE SEEM                                                                   |
| <u>class two room</u><br>2m x 2m GRIDS, 50% COVERAGE                             |
| • FLOOR                                                                          |
| VALL SURFACES BELOW 2 METERS     ACCESS POINTS TO A DISTANCE DE 25 BESTOND CLASS |
| TVD SURVEY UNIT                                                                  |
| ● INTERIOR HORIZONTAL SURFACES ABOVE 2m.                                         |
| 1m x 1m GRIDS, 10% COVERAGE                                                      |
| CEILING (SUSPENDED AND NONSUSPENDED)                                             |
| <ul> <li>UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE)</li> <li>RODES</li> </ul>    |
| - 100 S                                                                          |
| CLASS ONE ROOM - SPECIAL                                                         |
| •FLOOR                                                                           |
| • WALL SURFACES (UPPER AND LOVER)                                                |
| • UNEARTHEN RODES VITH DUCTS                                                     |
|                                                                                  |
| WHERE DUST DR PARTICLES COULD DEPOSIT.                                           |
| ●CEILING (SUSPENDED AND NUNSUSPENDED)                                            |
|                                                                                  |
| (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)                                       |
|                                                                                  |
| * #S 13, 14 & 15 ARE ON UNDERSIDE OF                                             |
| SUSPENDED CEILING                                                                |
| * #16, 17 & 18 ARE ARE UN TOP SIDE OF                                            |
| RESPECTIVELY                                                                     |
| * #S 19. 20 & 21 ARE AT TOP OF CEILING                                           |
| CAVITY ABOVE 13, 14 & 15 RESPECTIVELY                                            |
|                                                                                  |
|                                                                                  |
|                                                                                  |
|                                                                                  |
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|                                                                                  |
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|                                                                                  |
|                                                                                  |
|                                                                                  |
|                                                                                  |
| 0 3 6                                                                            |
| METERS 0 1 2                                                                     |
|                                                                                  |
| 0 4' 8' 12'                                                                      |
|                                                                                  |
| (APPROX. SCALE FT.)                                                              |
|                                                                                  |
| PARSONS                                                                          |
| PARSONS ENGINEERING SCIENCE, IN                                                  |
|                                                                                  |
| SENECA ARMY DEPOT ACTIVITY                                                       |
| REFERENCED FROM                                                                  |
| JLY 19, 1976. ENVIRONMENTAL ENGINEERING 730047-01001                             |
| AWING ND. 20-80,<br>5/16/80. BUILDING 816                                        |
| CONSULTING ENGINEERS ROOM 816-7                                                  |
| асстини. I UF 4,                                                                 |
| AS NOTED AS NOTED ACCUST 2001                                                    |



BUILDING INFORMATION REFERENCED FROM OFFICE OF POST THE ENGINEER DRAVING NO. 14-76, JULY 19, 1976. HIBBARD-ENGINEERS DRAVING NO. 20-80, SHEET NO. 1-10, DATE 5/16/80. ROBSON & VOESE INC. CONSULTING ENGINEERS DRAWING ND. M/E-1, SHEET ND. 1 DF 4, DATE AUG. 6, 1986.



- <u>CLASS ONE ROOM SPECIAL</u> 2m × 2m GRIDS, 100% COVERAGE
- + FLOOR
- . WALL SURFACES (UPPER AND LOWER)
- . UNEARTHEN ROOFS WITH DUCTS
- EXTENSION BUILDING SURFACES 2n FROM ACCESS
- HORRIZONTAL SURFACES ABOVE 2m ABOVE FLOOR
   WHERE DUST OR PARTICLES COULD DEPOSIT.
- CEILING (SUSPENDED AND NONSUSPENDED)





SECOND SUSPENDED CEILING CONSISTS OF 12'×12' TILES MANY OF VHICH ARE MISSING



| 167              | 171 | 139 | 179 |        |  |  |  |
|------------------|-----|-----|-----|--------|--|--|--|
| 168              | 172 | 176 | 180 |        |  |  |  |
| 169              | 173 | 138 | 181 | SOLITU |  |  |  |
| 140              | 174 | 177 | 137 |        |  |  |  |
| 170              | 175 | 176 | 182 |        |  |  |  |
| CONCRETE CEILING |     |     |     |        |  |  |  |

FEET 0 3 METERS 0 1 2 8′ 12' (APPROX. SCALE FT.) PARSONS PARSONS ENGINEERING SCIENCE, INC. CLIENT/PROJECT TITLE SENECA ARMY DEPOT ACTIVITY DEPT ENVIRONMENTAL ENGINEERING 750047-01001 BUILDING 816 ROOM 816-8 SCALE AS NOTED CAT TTANUTTA BOOO ALV.



NOTE(S):

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## CLASS ONE ROOM

- 2m x 2m GRIDS, 100% COVERAGE
- FLDDR
- WALL SURFACES BELDW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.
- . INTERIOR HORIZONTAL SURFACES ABOVE 2m.

- In x In GRIDS. 50% COVERAGE •CEILING (SUSPENDED AND NONSUS(ENDED) •UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) • ROOFS

DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)

NORTH WALL

| 32 | 33 | 18 |
|----|----|----|
| 35 | 36 | 37 |
| 17 | 39 | 38 |
| 42 | 43 | 44 |

SOUTH WALL




ROOM 816-10

NDTE(S):

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# <u>CLASS DNE ROOM</u> 2m × 2m GRIDS, 100% COVERAGE

- FLOOR
- VALL SURFACES BELOV 2 METERS
  ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS
  TVO SURVEY UNIT.

\_ \_ \_ \_ \_ \_

● INTERIOR HORIZONTAL SURFACES ABOVE 2n.

## 1<u>m x 1m GRIDS, 10% COVERAGE</u> •CEILING (SUSPENDED AND NONSUS(ENDED)

• UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) • ROOFS

DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)

NORTH VALL

| 25 | 26 | 27 |
|----|----|----|
| 29 | 16 | 30 |

SOUTH WALL





-: . ,

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4



24



NOTE(S): DATE AUG. 6, 1986.

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2m x 2m GRIDS, 50% COVERAGE FLOOR

- . WALL SURFACES BELOW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 28 BEYOND CLASS TWO SURVEY UNIT.
- . INTERIOR HORIZONTAL SURFACES ABOVE 24.
- 1m x 1m GRIDS, 10% COVERAGE
- CEILING (SUSPENDED AND NONSUSCENDED) UPPER VALLS (ABOVE 2m ABOVE FLOOR SURFACE) • ROOFS



DODRWAY (IF DODR PRESENT, CLOSE AND TREAT AS WALL)

(APPROX. SCALE FT.) PARSONS PARSONS ENGINEERING SCIENCE, INC. CLIENT/PROJEC" TITLE SENECA ARMY DEPOT ACTIVITY BUILDING INFORMATION REFERENCED FROM OFFICE OF POST THE ENGINEER DRAWING NO. 14-76, JULY 19, 1976. HIBBARD-ENGINEERS DRAWING NO. 20-80, SHEET NO. 1-10, DATE 5/16/80. ROBSON & WOESE INC. CONSULTING ENGINEERS DRAWING NO. M/E-1, SHEET NO. 1 OF 4, DATE 4005 6 1986 ENVIRONMENTAL ENGINEERING 730047-01001 BUILDING 816 ROOM 816-11 FIRST FLOOR & STAIRWAY SCALE AS NOTED DATE AUGUST 2001 B

0

4'

8'

12'



NOTE(S):

#### NOTE:

#### CLASS TWO ROOM

2m × 2m GRIDS, 50% COVERAGE • FLOOR

- WALL SURFACES BELOW 2 METERS
- ACCESS POINTS TO A DISTANCE OF 2m BEYOND CLASS TWO SURVEY UNIT.

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- 1

● INTERIOR HORIZONTAL SURFACES ABOVE 2m.

#### <u>1m x 1m GRIDS, 10% CO∨ERAGE</u>

- CEILING (SUSPENDED AND NONSUSPENDED)
- UPPER WALLS (ABOVE 2m ABOVE FLOOR SURFACE) ROOFS

|   | • | ۲ | ۲ | ٠ | • | ۲ |  |
|---|---|---|---|---|---|---|--|
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| ÷ |   |   |   |   |   |   |  |
| н |   |   |   |   |   |   |  |
| Ŀ |   |   |   |   |   |   |  |
| н |   |   |   |   |   |   |  |
|   |   |   |   |   |   |   |  |
|   |   |   |   |   |   |   |  |

DOORVAY (IF DOOR PRESENT, CLOSE AND TREAT AS VALL)



3

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| ()] |    |    |      | 39 |  |  |
|-----|----|----|------|----|--|--|
|     |    |    |      |    |  |  |
|     | 34 |    |      |    |  |  |
|     |    |    | 35   |    |  |  |
|     |    |    | (36) |    |  |  |
|     |    | 38 |      |    |  |  |



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ROOM 816-13B

\_\_\_\_\_

1

SOUTH WALL

NORTH WALL



CEILING

BLDG, 819 ROOM 819-1 APPROX. SCALE: 1' = 6'-0'

WAI

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NOTE(S):

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#### NOTE:



- <u>CLASS DNE ROOM</u> <u>2m x 2m GRIDS, 100% COVERAGE</u>

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- FLOOR
- WALL SURFACES BELDW 2 METERS
- UNEARTHEN ROOFS WITH DUCTS
- EXTERIOR BUILDING SURFACES 2m FROM ACCESS HORIZONTAL SURFACES ABOVE 2m ABOVE FLOOR WHERE DUST OR PARTICLES WOULD DEPOSIT.

1m × 1m GRIDS, 10% CO∨ERAGE • CEILING (SUSPENDED AND NONSUS(ENDED)

• UPPER WALLS (ABOVE 2m)



| FEET           | $RS_0^0$       | 3 6<br>1 2  |            |
|----------------|----------------|-------------|------------|
| 0              | 6'             | 12'         | 18'        |
| (APP           | ROX. SC        | ALE FT.)    |            |
| PARSON         | 5              |             |            |
| PARSONS E      | GINEE          | RING SCI    | ENCE, INC. |
| SENECA A       | RMY I          | EPOT A      | ACTIVITY   |
| DEPT           | 14.(01,1++14), | G 7500      | 47-01001   |
| В              | UILDIN         | IG 819      |            |
| ]              | ROOM           | 819-1       |            |
| SCALÉ AS NOTED | DATE           | NCEMBER 199 |            |

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BUILDING INFORMATION REFERENCED FROM BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-621, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58. BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-845, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58.



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### NOTE:

# <u>CLASS ONE ROOM</u> 2m x 2m GRIDS, 100% COVERAGE

• FLOOR

- WALL SURFACES BELOW 2 METERS
- . UNEARTHEN ROOFS WITH DUCTS

• EXTERIOR BUILDING SURFACES 2m FROM ACCESS +MORIZONTAL SURFACES ABOVE 2m ABOVE FLOOR WHERE DUST OR PARTICLES WOULD DEPOSIT.

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1m x 1m GRIDS, 10% COVERAGE • CEILING (SUSPENDED AND NONSUSCENDED) • UPPER WALLS (ABDVE 2m)





MISSING CEILING TILE

29 - BOTTOM OF DUCT 30 - TOP OF DUCT

| FEET<br>METER  | s 0        | 3               | 8                              |    |
|----------------|------------|-----------------|--------------------------------|----|
| 0              | 4*         | 8'              | 12'                            |    |
| (4             | PPROX.     | SCALE F         | Т.)                            |    |
|                | INS        |                 |                                |    |
| PARSONS        | ENGIN      | ERING           | SCIENCE, INC                   | :. |
| SENECA         | ARMY       | DEPO            | Τ ΑΟΤΙVΙΤΥ                     |    |
|                | TAL ENGINE | D=0             | <sup>40.</sup><br>730047-01001 | -  |
|                | BUILE      | )ING 8<br>1819- | 19<br>-2                       |    |
| SCALE AS NOTED | DA         | JANUARY         | 8000 A                         | _  |

BUILDING INFORMATION REFERENCED FROM BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-621, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58. BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-845, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58.

| _ | _ | <br> | <br>_ | <br>_ | _ |  |
|---|---|------|-------|-------|---|--|

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| 65 | 60 | 12 | 13 | 14        | 15         | 16 | 17 | 39 |    |
|----|----|----|----|-----------|------------|----|----|----|----|
|    | 59 | 11 | 10 | 9         | 8          | 7  | 6  | 40 | 40 |
|    | 58 | 0  | 1  | 2<br>FLOC | 3<br>JR    | 4  | 5  | 41 |    |
|    |    | 52 | 51 | 50        | 49         | 48 | 47 |    |    |
|    |    |    | 67 | 53        |            |    | 54 |    |    |
|    |    | 50 | 3  |           | 55         |    |    |    |    |
|    |    |    |    | 30014     | BLDG. 819- | -3 |    |    |    |

|        |    |    |    | 69 | 70 | 71 | 72 | 73 | 74 |    |    |    |    |   |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
|        | 66 |    | 63 | 35 | 34 | 33 | 32 | 31 | 30 | 36 |    |    |    | _ |
|        |    | 67 | 62 | 24 | 25 | 26 | 27 | 28 | 29 | 37 |    | 43 |    | _ |
| <br>64 |    |    | 61 | 23 | 22 | 21 | 20 | 19 | 18 | 38 |    |    |    |   |
|        | 65 |    | 60 | 12 | 13 | 14 | 15 | 16 | 17 | 39 |    |    | 45 | 5 |
|        |    |    | 59 | 11 | 10 | 9  | 8  | 7  | 6  | 40 | 46 |    |    |   |
|        |    |    |    | 1  |    |    | 1  |    |    |    |    |    |    |   |

|    |    |    |    |   |    | 75 |    |   |
|----|----|----|----|---|----|----|----|---|
|    | 77 |    |    |   |    |    |    |   |
|    |    |    | ±  |   |    |    |    |   |
|    |    |    | 79 |   | 76 |    |    |   |
|    |    |    |    |   |    |    | 78 |   |
| 69 |    | 70 | 71 | 7 | 12 | 73 | 74 | 4 |

NORTH WALL

|    |    |    | <br>   | NO  | RTH  |    |    |    |    |    |
|----|----|----|--------|-----|------|----|----|----|----|----|
|    |    |    | <br>92 |     |      |    |    |    |    | 91 |
|    | 89 |    |        |     |      |    | 84 |    |    |    |
|    |    | 85 |        |     |      |    |    |    |    |    |
|    |    |    | 82     |     |      |    |    |    | 80 |    |
|    |    |    |        |     |      |    |    | 87 |    |    |
|    |    |    |        |     |      |    |    |    |    |    |
| 81 |    |    | 86     |     |      |    |    |    |    |    |
|    |    |    |        |     | 94   |    |    |    |    |    |
|    |    |    |        |     |      |    |    |    |    |    |
|    |    |    |        |     |      | 83 |    |    | 90 |    |
|    |    |    |        |     |      |    |    |    |    |    |
|    | 88 |    |        | 93  |      |    |    |    |    |    |
|    |    |    |        | SD  | UTH  |    |    |    |    |    |
|    |    |    |        | CEI | LING |    |    |    |    |    |

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|     |     |                    |                           |                                   | C                                         |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|-----|-----|--------------------|---------------------------|-----------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
| 123 | 124 | 96                 | 125                       | 126                               | 127                                       | 128                                                                               | 145                                                                                             | 129                                                               | 130<br>148                                                                                                                  | 131                                                                                                                                       | 132                                                                                                                                                                                                                                    |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
| 134 | 135 | 136                | 137                       | 138                               | 139                                       | 140                                                                               | 146                                                                                             | 141                                                               | 142                                                                                                                         | 143<br>150<br>151                                                                                                                         | 144                                                                                                                                                                                                                                    |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|     |     |                    |                           |                                   |                                           |                                                                                   |                                                                                                 |                                                                   |                                                                                                                             |                                                                                                                                           |                                                                                                                                                                                                                                        |
|     | 123 | 123 124<br>134 135 | 123 124 96<br>134 135 136 | 123 124 96 125<br>134 135 136 137 | 123 124 96 125 126<br>134 135 136 137 138 | 123    124    96    125    126    127      134    135    136    137    138    139 | 123    124    96    125    126    127    128      134    135    136    137    138    139    140 | 123 124 96 125 126 127 128 145<br>134 135 136 137 138 139 140 146 | 123    124    96    125    126    127    128    145    129      134    135    136    137    138    139    140    146    141 | 123    124    96    125    126    127    128    145    129    130      134    135    136    137    138    139    140    146    141    142 | 123    124    96    125    126    127    128    145    129    130    131      134    135    136    137    138    139    140    146    141    142    143      134    135    136    137    138    139    140    146    141    142    143 |



#### NOTE:

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# <u>CLASS DNE ROOM</u> <u>2m × 2m GRIDS, 100% COVERAGE</u>

- FLDDR
- VALL SURFACES BELDY 2 METERS
- UNEARTHEN RODES WITH DUCTS
- EXTERIOR BUILDING SURFACES 2m FROM ACCESS
  HORIZONTAL SURFACES ABOVE 2m ABOVE FLOOR
  WHERE DUST OR PARTICLES VOULD DEPOSIT.

<u>1m × 1m GRIDS, 10% COVERAGE</u> • CEILING (SUSPENDED AND NEWSUSCENDED) ● UPPER WALLS (ABDVE 2m)

DOORVAY (IF DOOR PRESENT, CLOSE AND TREAT AS VALL)

DIMENSIONS OF THE CRANE ARE APPROXIMATE



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NDTE(S): BUILDING INFORMATION REFERENCED FROM BLACK & VEATCH CONSULTING ENGINEERS. DRAWING ND. Y2-621, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58. BLACK & VEATCH CONSULTING ENGINEERS. DRAWING ND. Y2-845, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58.



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#### NOTE:

### CLASS ONE ROOM

2m x 2m GRIDS, 100% CO∨ERAGE

\_\_\_\_\_

- FLOOR
- WALL SURFACES BELDW 2 METERS
- . UNEARTHEN ROOFS WITH DUCTS

•EXTERIOR BUILDING SURFACES 2m FROM ACCESS •HORIZONTAL SURFACES ABOVE 2m ABOVE FLOOR WHERE DUST OR PARTICLES WOULD DEPOSIT.

Im x Im GRIDS, 10% COVERAGE • CEILING (SUSPENDED AND NONSUSCENDED)

• UPPER VALLS (ABOVE 2m)

DODRWAY (IF DODR PRESENT, CLOSE AND TREAT AS WALL)



MISSING CEILING TILE



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UTECS) BUILDING INFORMATION REFERENCED FROM BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-621, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58. DRAWING NO. Y2-845, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58.



NOTE(S):

#### NOTE:



- CLASS ONE ROOM 2m x 2m GRIDS, 100% COVERAGE
- FLOOR
- WALL SURFACES BELOW 2 METERS
- UNEARTHEN RODES WITH DUCTS

• EXTERIOR BUILDING SURFACES 2m FROM ACCESS + MORIZUNTAL SURFACES ABOVE 2m ABOVE FLOOR WHERE DUST OR PARTICLES WOULD DEPOSIT.

- 1m x 1m GRIDS, 10% COVERAGE CEILING (SUSPENDED AND NONSUSCENDED)
- UPPER WALLS (ABOVE 2m)

DOORWAY (IF DOOR PRESENT, CLOSE AND TREAT AS WALL)

\_ \_ \_ \_ \_ \_



MISSING CEILING TILE

| FEET 0               | 3         | 6         |         |
|----------------------|-----------|-----------|---------|
| METERS 0             | 1         | 2         |         |
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BUILDING INFORMATION REFERENCED FROM BLACK & VEATCH CONSULTING ENGINEERS. DRAWING NO. Y2-621, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58. DRAWING NO. Y2-845, MAY 2, 1955. REVISED RECORD WORK AS-BUILT 6/2/58.

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NOTE(S): BUILDING INFORMATION BLACK & VEATCH CONS DRAWING NG Y2-621, M REVISED RECORD WORK BLACK & VEATCH CONS DRAWING NG Y2-845, REVISED RECORD WORK

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- . UNEARTHEN ROOFS WITH DUCTS
- EXTERIOR BUILDING SURFACES 2H FROM ACCESS
- HORIZONTAL SURFACES ABOVE 2M ABOVE FLOOR
  WHERE DUST OR PARTICLES VOULD DEPOSIT.

1m × 1m GRIDS, 10% COVERAGE . CEILING (SUSPENDED AND NONSUSTENDED) ● UPPER VALLS (ABOVE 2m)

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#### NOTE:

CLASS DNE ROOM 2m × 2m grids, 100% coverace •Floor

- VALL SURFACES BELOW 2 METERS
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NOTE(S):

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WHERE DUST OR PARTICLES YOULD DEPOSITE 1m × 1m GRIDS, 10% COVERAGE

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SOUTH WALL BLDG. 819-11A

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CLASS ONE ROOM 2m x 2m GRIDS, 100% COVERAGE +FLODR

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## Appendix Q

Response to comments on the Draft Radiological Survey Report (SEAD-12), Phase I and II Surveys (Parsons, August 2002)

#### **Response to Comments from the U.S. Environmental Protection Agency**

Subject: Draft Radiological Survey Report for SEAD-12 Seneca Army Depot Romulus, New York

Comments Dated: September 24, 2002

Date of Comment Response: March 24, 2003

### **General Comments:**

<u>Use of URSA</u>. The URSA data collected was not used as part of the MARSSIM survey. The scanning data and direct alpha, beta and gamma measurements were used for this purpose. The gamma spectroscopy data and exposure (uR) data were additional measurement that were made but were outside of the scope of a MARSSIM survey. However, Parsons did use the gamma spectroscopy (URSA) data to make some conclusions about the source of the elevated levels that were identified during the course of the MARSSIM survey. But, there was no explanation in the report of how they related the gamma spectroscopy data collected (Appendix O) to their conclusions that these elevated measurements are due to naturally-occurring radionuclides.

Laboratory analysis was done on some samples to verify some of the URSA results; however, the laboratory results don't support the URSA results. In most cases, the Pu-239/240 and Am-241 were not detectable. In addition, for the background samples for which Parsons did identify these two radionuclides, they note that the identification is complicated by several radionuclides also having gamma emissions at about the same energy.

While the survey team reached conclusions regarding areas of contamination potentially exceeding the DCGLs and these areas were further investigated with gamma spectroscopy, insufficient information was provided to allow the evaluation of the assumptions based on in situ gamma spectroscopy. The text should be revised to explain the method used to determine that exceedances were the result of elevated natural background. Based on the results of the gamma spectroscopy results (obtained with the URSA technology), a high level of confidence was not established that an accurate isotopic resolution of specific energy peaks was achieved.

**Response**: The text, tables, and figures of Appendix O were inadvertently omitted from the Draft SEAD-12 Radiological Survey Report (Parsons, August 2002) and Appendix O has been provided for inclusion in this report. A brief summary of the procedure used in collecting and evaluating in-situ gamma spectroscopy measurements explained in Appendix O is provided below.

Locations to analyze with in-situ gamma spectrometry using the URSA system were chosen because they were either an area of potential concern, or the location had the highest gamma measurement in
Response to USEPA Comments on Draft Radiological Survey Report for SEAD-12 Comments Dated September 24, 2002 Page 2 of 4

the survey unit. Upon collection of a gamma energy spectrum, the energy spectrum was analyzed using the URSA Multi-Channel Analyzer (MCA) software. When analyzing the energy spectrum a smoothing factor, or a weighted averaging of the energy data, is applied. Three different smoothing factors were used: 36, 24, and 16; the larger the smoothing factor, the greater the averaging. These three smoothing factors are best used for detectors with wider resolutions, like the NaI-based FIDLER, where the photomultiplier tubes used do not supply a smooth continuum of energies. The choice of smoothing factor eliminates some of the statistical uncertainty inherent in the measurement. After the smoothing factor has been applied, the MCA software then performs an automatic peak search, which may then be supplemented by manual peak identification. Once the peaks have been identified, the software analyzes the energy ranges of the peaks to determine what radionuclides may be present. The radionuclide identification can be completed using two different methods of comparison: identification by peak energy +/- 6 keV, or identification by evaluating the peak's full width at half maximum (FWHM). The FWHM value relates to the shape or resolution of the overall peak. The information is clarified further in Appendix L, Guidance for Spectrum Analysis Process, and in Appendix O, Interpretation of Gamma Spectroscopy Results.

For each radionuclide identification method (energy band or FWHM) and each smoothing factor (36, 24, and 16), an URSA MCA report is generated that contains potential radionuclide identifications. A total of 6 reports were generated for each spectrum collected; these reports are located in Appendix O on the compact disc (provided with the draft report in August, 2002).

Upon generation of the URSA MCA reports, additional analysis is completed that consists of compiling the potential identifications with the corresponding peak energies and FWHM value for that peak. The peak FWHM values are evaluated to determine if the radionuclides that were identified by the MCA software are accurate and reasonable. This evaluation is to determine if the identified peak fractional FWHM value (a measure of the resolution of the energy peak) is less than 10% for primary peaks and 20% for secondary peaks – these percentages are conservative guidelines based on the expected energy resolution (5-10%) of NaI detectors and on the radionuclide specific examples using calibration standards. True radionuclide identifications are then additionally analyzed by evaluating their relation to any other radionuclides identified in the spectrum for radioactivity relationships (e.g., parent/progeny).

Once the true identification analysis is complete, ratios of different radionuclide activities are assessed. Naturally occurring radioactivity exhibits a known set of ratios between parent/progeny radionuclides (U-238 to Th-234) and between different isotopes (i.e., U-238, U-234, and U-235). The same is also true of man-made radionuclides such as the radionuclides associated with weapons grade plutonium. Also the presence or absence of specific radionuclides within the spectrum can determine the nature of the spectrum being analyzed (i.e., the absence of significant amounts of decay progeny in processed uranium materials). At this point, determinations can be made about what radionuclides

Response to USEPA Comments on Draft Radiological Survey Report for SEAD-12 Comments Dated September 24, 2002 Page 3 of 4

were correctly identified in the energy spectrum and if these radionuclides exist as part of a naturally occurring decay scheme.

Material samples were collected within the SEAD-12 buildings, in addition to collecting the in-situ gamma spectroscopy measurements, to verify the results from the Final Status Survey (FSS). A limited amount of material samples were collected based on the results of the gamma radiation survey and sent to an off-site laboratory for isotopic analysis. The laboratory analysis reported mostly non-detect values for the isotopes. Where there were identified isotopes, the results were negligible based on the small quantities measured in relation to the associated error. These results are presented in Table 4-27.

Following the procedure outlined above, Am-241 and Pu-239/240 were identified in the in-situ gamma spectrometer energy spectrums. However, upon completion of the analysis, these radionuclides, which were present with several other radionuclides (Pb-210, Ac-228, U-238, Tl-208, and Th-228) having gamma emissions at 13 keV, were determined to be misidentified based on the presence of progeny and parents present and the historical use of the building.

# Specific Comments:

**Comment 1**: <u>Section 4.5.7</u>, <u>Material Sampling Results</u>. Isotopic information was collected in addition to MARSSIM-based sampling. A minimum of one in situ spectroscopy measurement was collected in each building. A total of 96 measurements were collected. The locations selected in each building were based on actual elevated contamination measurements or the potential for exceeding DCGLs (based on the results of the WRS test). To confirm gamma spectroscopy results, material samples were collected at seven locations. These were analyzed using gamma spectroscopy onsite and then sent offsite for further Pu-239 and Am-241 isotopic analysis.

Although referred to, additional discussion of Table 4-27 is needed. The results presented in this table do not indicate a favorable comparison of results. The laboratory results reported detectable concentrations of Am-241 in all samples, but the gamma results were below detection in six of these. The seventh gamma spectroscopy sample reported levels of both Pu-239 and Am-241, but at much higher levels than the laboratory results. This lack of agreement should be discussed.

**Response 1**: Isotopic laboratory results indicate detectable concentrations for Pu-239/240 and Am-241 in only two samples; in both cases there is a large error associated with the detection. All other laboratory results for Pu-239/240 and Am-241 were below the MDA and are therefore considered to be non-detect, as noted by the standard "U" qualifier in Table 4-27. The analytical results from the material samples confirm the findings of the in-situ gamma spectroscopy (i.e., that there is no residual Pu-239/240 or Am-241 contamination in the SEAD-12 buildings). The discrepancy in the detected

Response to USEPA Comments on Draft Radiological Survey Report for SEAD-12 Comments Dated September 24, 2002 Page 4 of 4

concentrations for sample BKGD CB1 is a result of the laboratory analyses being conducted using alpha spectroscopy, which is more exact (i.e., the primary alpha energies of the radionuclides potentially present are less similar than their gamma energies). The concentrations reported in Table 4-27 for the gamma spectroscopy results from that sample reflect the contributions of several naturally-occurring radionuclides with low energy gamma emissions. This overlap is not as likely for alpha spectroscopy analyses.

**Comment 2**: <u>Section 5.2.5</u>, <u>Gamma Spectroscopy</u>. Additional explanation is needed to document the way that the elevated gamma spectroscopy results were inferred as naturally occurring. The text indicates that one other radionuclide (associated with the natural U-238 decay chain") was identified, but it is not noted. The justification for assuming it is in equilibrium with U-238 is not presented. This determination can only be made by examining the radionuclide profile of the sample and comparing the concentrations of various radionuclides within the U-238 decay chain. These data are not presented or discussed.

**Response 2**: Discussion regarding the in-situ gamma spectroscopy results is presented in the text of Appendix O, which was inadvertently omitted in the Draft SEAD-12 Radiological Survey Report (Parsons, August 2002). The following topics are addressed in Appendix O:

- Man-made radioactive materials;
- Artificially enhanced uranium;
- Naturally-occurring uranium and thorium;
- Assessing the potential for identified spectral peaks being associated with ambient background;
- Radionuclide identification; and
- Specific identifications within SEAD-12 buildings.

Additional rational for concluding that the survey unit that includes location Building 804, room 1, grid 13 (sample number 14) is suitable for release is presented in Section O.6 and Table O-3 of Appendix O. As indicated in Table O-3, sample number 14 identified Pb-210 in addition to U-235. Pb-210 is the radionuclide referred to in Section 5.2.5 of the text as being the one other radionuclide associated with natural U-238 decay chain that was identified.

## Response to Comments from the New York Department of Environmental Conservation

Subject: Draft Radiological Survey Report – SEAD-12 Phase I and Phase II Surveys Seneca Army Depot Romulus, New York

### Comments Dated: February 6, 2003

### Date of Comment Response: March 24, 2003

The New York State Department of Health (NYSDOH) has reviewed the above referenced document. Comments are as follows

#### **General Comments:**

While the NYSDOH does not agree on all aspects of this report, it does incorporate many of the suggestions offered by NYSDEC, NYSDOH and USEPA in previous correspondence.

Based on our initial review of this report and accompanying data, the NYSDOH find no overwhelming evidence to object to the conclusions arrived at by the US Army that SEAD-12 buildings can be unrestrictedly released, based on the radiological considerations. There are, however, some general and specific questions or concerns relating to MARSSIM Methodology utilized and some conclusions drawn from some data on elevated areas in some buildings.

Since the NYSDOH's initial involvement in reviewing decommissioning plans there was concern that there was little or no historical documentation of activities performed in these buildings. This led to the decision by the Army to conduct a simultaneous characterization and final status survey using MARSSIM approach. We agreed at that time that data obtained during the characterization survey could be incorporated in the final status survey. Because MARSSIM assumes that all decontamination efforts have been completed, a statistical approach for the final status is acceptable.

In this case, physical samples were only obtained from bias elevated scanning locations on a limited basis and not from a random sampling nor pre-determined number of samples. It is difficult, therefore, to justify acceptance solely on the statistics generated, since the procedure was not strictly followed.

Although MARSSIM was not starkly adhered to in this case, there does not appear to be any evidence that remaining contamination would exceed negotiated clean up goals.

**Response**: The characterization and final status surveys (FSS) within the SEAD-12 buildings were completed simultaneously as agreed upon between the regulators and the Army. The surveys were

Response to NYSDEC Comments on Draft Radiological Survey Report – SEAD-12 Comments Dated February 6, 2003 Page 2 of 3

planned such that the appropriate data for performing a FSS would be collected so that the appropriate statistical analysis could be performed to demonstrate compliance of the survey unit.

The samples collected during the SEAD-12 Building Surveys included direct alpha, beta, and gamma measurements, exposure rate readings, alpha/beta/gamma radiation smear samples, tritium samples, material samples for laboratory analysis, and in-situ gamma spectroscopy measurements. The sampling design was based on having the total number of direct measurements collected meet the minimum number of samples required for statistical analysis. All other samples collected were beyond what was needed statistically to serve as confirmation of the surface measurements providing additional support for the conclusions made based on the final status survey. The location of all direct measurements collected in the Class I and II survey units was based on a random-start grid; measurements collected in Class III survey units were based on both random and biased locations. MARSSIM does not differentiate between direct measurements and physical samples as long as the data requirements are being met (MARSSIM, September 2000, Section 6.1). Since the main concern in the SEAD-12 buildings was surface contamination, it was appropriate to use direct surface measurements as the primary means of sampling.

### Specific Comments:

**Comment 1**: Section 5.2.1.1, Gamma Measurements: Please explain the necessity of re-converting a gamma measurement expressed in an activity of  $dpm/100 \text{ cm}^2$  back to a count rate in cpm. The whole purpose is to take a cpm measurement and convert it to an activity or unit area. The end purpose of evaluating an area further if it exceeds background is fine.

**Response 1**: The FIDLER and count-rate meter combination used to collect gamma measurements provides results in counts per minute (cpm). In order to make a direct comparison of the raw survey data against the DCGL<sub>w</sub>-adjusted background, the DCGL<sub>w</sub>-adjusted background data for Am-241 (the most conservative radionuclide) were converted to counts per cpm using the daily instrument. While it is acknowledged that a conversion from cpm-to-dpm could also be performed, it was felt that the cpm-to-dpm conversion would be less straightforward and would involve making assumptions about the efficiencies of the instruments used for the background survey (performed in 1999).

**Comment 2**: Table 5-5, Building 804: The result of gamma spectroscopy indicates an activity exceeding the DCGL<sub>w</sub> for U-235. The conclusion, however, is that the elevated level is naturally occurring. Given that U-235 exists in nature as .07% of the total uranium present; why is there no U-238 or U-234 reported in the sample? Could the result have been misidentified? Building 819 indicated both elevated U-235 and Ra-226 with the conclusion that they are naturally occurring. It is highly unlikely that these levels are found naturally in building materials. It's more likely they have been incorrectly identified due to their similar energies. If not, some additional decontamination may

Response to NYSDEC Comments on Draft Radiological Survey Report – SEAD-12 Comments Dated February 6, 2003 Page 3 of 3

be warranted. Using an explanation that alpha measurements do not exceed DCGL's is not acceptable, given the possibility of alpha emissions being obscured by paint or other covering.

**Response 2**: Discussion regarding the in-situ gamma spectroscopy results is presented in Appendix O, which was inadvertently omitted in the Draft SEAD-12 Radiological Survey Report (Parsons, August 2002). This section of Appendix O has been provided for inclusion into the report.

Pb-210, which is a decay product of both U-238 and U-234, was identified in the Building 804, Room 1 sample. Typically, U-238 and U-234 were not specifically identified in the gamma spectroscopy measurements because of the relatively low intensities of their gamma emissions. Rather, the detection of Th-234 (which is a short-lived decay product of U-238) was used as an indicator that U-238 and U-234 were present. It is possible that the ~186 keV identified as U-235 (Table O-3) could instead be Ra-226 (or a combination of both radionuclides). Likewise Th-234 and two other naturally-occurring radionuclides (Pa-234 and Ac-228) have gamma emissions with energies in the ~95 keV range that may contribute to the reported confirmatory peak for U-235 (96.9 keV). In any case, the gamma spectroscopy results support that there is no contamination at this location.

Given the history and known use of Building 819 Room 12 (an engineering space with a separate entry than the rest of the building) it is unlikely that there would be any residual contamination in this room. The detections of Pb-214 (from the U-238 decay series) and Bi-211 (from the U-235 decay series) suggest that the detections of Ra-226 and U-235 are also the result of naturally-occurring material. It should be noted that this worst case Ra-226 concentration (5388 dpm/100cm<sup>2</sup>) is still below the ANSI/HPS Ra-226 surface-screening standard for a dose limit of 10 mrem/yr (6000 dpm/100cm<sup>2</sup>, from ANSI/HPS N13.12-1999, *Surface and Volume Radioactivity Standards for Clearance*).

Furthermore, if radium contamination were present, it would likely be in the form of radium paint. While chemical processing does remove decay products and parents from the radium used in luminescent paints, isotopic separation of the radium is generally not performed. As a result, both naturally-occurring Ra-226 and Ra-228 (from the Th-232 decay series) would likely be present in any sort of radium paint bearing material. Both Ra-228 and its immediate progeny Ac-228 are beta emitters. It is agreed that any residual alpha surface contamination would not be detected through paint (if it were painted over); however, any potential radium contamination would also have a beta component (particularly from Ac-228) that would be detectable. Since there were no elevated beta measurements in Building 819 Room 12, it is reasonable to conclude that there is no radium contamination present.

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