104-SP

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

August 9, 2004

Docket No. 04008526 License No. SUC-1275
Control No. 135163

Stephen M. Absolom
Installation Manager
Caretaker Office
Seneca Army Depot Activity
5786 State Route 96
P.O. Box 9
Romulus, NY 14541-0009

SUBJECT: DEPARTMENT OF THE ARMY, REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR AMENDMENT TO LICENSE, CONTROL NO. 135163

Dear Mr. Absolom:

This is in reference to your letter dated June 15, 2004 requesting to amend Nuclear Regulatory Commission License No. SUC-1275. In order to continue our review, we need the following additional information.

1. Your compliance approach does not appear to follow that recommended in MARSSIM. The null hypothesis recommended for use in MARSSIM is: "the residual radioactivity in the survey unit exceeds the release criteria." This statement directly addresses the issue of compliance with the DCGL, and requires significant evidence that the residual radioactivity in the survey unit is less than the DCGL to reject the null hypothesis and pass the survey unit. Distinguishability from background is not addressed under this hypothesis. Additionally, Appendix 1A of your submittal, License Termination and License Release Plan (LTP), Table 5-4, footnote 6, states that the alpha value in Table 5-4 is the acceptable level of Type I decision error, when the null hypothesis is that survey unit exceeds the cleanup standard. This statement is consistent with the recommended null hypothesis in MARSSIM. Please discuss the statistical methods you used for determining compliance to the DCGLs relative to the null hypothesis recommended in MARSSIM and presented in Table 5-4 of your LTP. Also please provide the retrospective power curves.

2. MARSSIM recommends that when gross activity DCGLs are used, an appropriate weighted total efficiency should be used for the radiological surveys. Please provide the calculations for determining the weighted total efficiencies used for the radiological surveys. If weighted total efficiencies were not used, please provide the basis for not using weighted total efficiencies. In addition, MARSSIM states that the total efficiency for survey instruments may be considered to represent the product of two factors, the instrument efficiency and the source efficiency. Please provide the instrument efficiencies and source efficiencies used in the determination of the total efficiencies for the radiation survey instruments used to perform the radiological surveys. If

the total efficiencies, please provide the basis for not using these efficiencies for determining the total efficiency.

3. Please provide examples of the calculations for the MDAs presented in Tables 3-3, 4-3, 5-3, and 6-2.

4. Please provide the method used to determine the mean cpm in Tables 3-11 and 4-10. Also please provide the standard deviation for these mean values.

5. MARSSIM states that sample results should be reported along with their associated uncertainties. For smear sample results in Tables 3-13, 4-12, 5-9, and 6-5, please provide the uncertainties for the results and the standard deviation for the average results. Also, for the sample results in Tables 3-14 and 4-13, please define the reported uncertainties. For example, do they represent the counting uncertainty (at some confidence interval) or the total propagated uncertainty (at some confidence interval).

6. Section 5.3.3 of the report on page 5-3 states: "Per MARSSIM for Class 1 survey units, all direct and scanning measurements from each building were compared directly with the $DCGL_{EMC}$ for DU. A following sentence in Section 5.3.3 states: "Scanning measurements from Building 612 were not available to preform the $DCGL_{EMC}$ comparison. Table 5-3 indicates that the instrumentation used for the survey of Building 612 included a floor monitor. However, no scanning measurements are included in the data tables for section 5 of the report. Were scanning measurements made during the survey of Building 612? If so, please provide these measurements. Table 5-3 also reports an efficiency of 0.75% for the FIDDLER, resulting in a scanning MDA of 167,867 dpm/100cm^2 which is above $DCGL_W$ for DU. The FIDDLER efficiencies presented in Tables 3-3 and 4-3 are 15%. Please explain the difference in the FIDDLER efficiencies.

In accordance with 10 CFR 2.390, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html.

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control No. 135163. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5214.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we shall assume that you do not wish to pursue your application.

Sincerely,

Original signed by James Kottan

James Kottan
Senior Health Physicist
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety

Enclosure:
10 CFR Parts 19, 20, and 30

cc:
John Cleary, Radiation Safety Officer

WORK AUTHORIZATION DIRECTIVE (WAD)
BASE REALIGNMENT AND CLOSURE (BRAC) ENVIRONMENTAL RESTORATION
AND FUNDS RELEASE DOCUMENT

CEMP-RI 19 May 2003

DIRECTIVE NO. BR-SEN-03-03

ISSUED THRU: CENAD-PM-M (D'AGOSTA)
TO: CENAN-PP-E (BATTAGLIA)

65K of this was sent to ANL, June 03. The rest of it should remain or hold in NYC until needed.

ISSUED FOR: BRAC 95 ER at **Seneca AD, NY**.

1. Reference DA FAD, 15 May 2003, advice number 03-0002-00613.

2. You are authorized Base Closure Account (BCA) environmental restoration funds to execute the following project(s).

BRAC ROUND: (1, 91, 93, or 95) 95 increase X/decrease__reprog__

APPRN: 97 X/2008 0510.40I1 3 **DIV/DIST**: NAN **ASN:** 8011

PROJECT	AMSCO	+/- ALLOCATION
RAD	62366S13	+ $ 130,000

POC at CENAN-PP-E is Randy Battaglia, 607-869-1523. POC at CEMP-RI is Bob Martin, 202-761-4904.

3. These funds are for the above specified projects only. The funds may not be transferred to other projects without approval and authorization of this office.

4. These funds must be obligated within 30 days of receipt. If these funds cannot be obligated in 30 days this office is to be notified immediately.

5. Accounting and Reporting Instructions:
   a. Report all financial data on a monthly basis via the Integrated Command Accounting and Reporting (ICAR) System.
   b. Report excess funds to CEMP-RI as soon as they are identified.
   c. Provide a copy of this WAD to your Resource Management Office.

CF: AMC (ANDEREGG); CENAN-PP-M (DOWNING)

PARSONS

MEMORANDUM

TO: Steve Absolom, SEDA
Tom Enroth, USACE, NY District

DATE: February 27, 2004

FROM: Jacqueline Travers, Parsons
Katie Kadlubak, Parsons
John Hackett, Parsons

COPIES: **File**

SUBJECT: NRC Site Wide Evaluation Approach

As we discussed during our conference call last week (2/19/04), the Nuclear Regulatory Commission (NRC) Region I has indicated that in preparing the license termination report for current licenses, they would like an evaluation performed of the "entire site". In their letter to the Army dated July 26, 2000, they state,

> ". . . because you plan to terminate the license and release the entire facility for use, confirm that you will evaluate the entire site [including Building 612, the bunkers listed above, and any other facilities remaining on your site that were previously released for unrestricted use] to determine if the site meets the Radiological Criteria for License Termination specified in 10 CFR 20.1402, that any residual radioactivity from all facilities at your site does not result in a total effective dose equivalent (TEDE) greater than 25 millirem per year to an average member of the critical group."

In response to this comment, the License Termination and License Release Plan (LTP; ANL, 2003), stated that

> "In addition to the buildings covered directly under the license, and in accordance with NRC's July 26, 2000 letter to this effect, the entire site will be evaluated to determine that it meets Radiological Criteria for License Termination specified in CFR 20.1402 and applicable State criteria. This evaluation will include a review of any facilities previously released for unrestricted use and any facilities or areas currently undergoing cleanup. Historical survey records will be reviewed from previously released areas to evaluate whether they meet current release standards, while other ongoing radiological cleanups will be coordinated with license termination activities."

The sites under the existing licenses with NRC include the following:

- The 121 ammunition storage bunkers; and
- Buildings 612, 5, 306, 2084, 2073, and 356.

Other radiological sites not directly under a current license to terminate include the following:

- The Pitchblende Ore Storage Igloos (SEAD-48); and
- SEAD-12.

Concerns were raised during our discussion last week, that if all sites are to be considered, certain areas still under investigation at SEAD-12 and SEAD-48 may impede the progress of license termination. Parsons was asked to come up with approaches to satisfy NRC's request to evaluate the entire site in the license termination process.

Parson has considered two approaches. They are detailed below.

Approach A:

This MARSSIM-based approach involves determining the dose to a receptor at each Site at Seneca Army Depot, defined below. Approach A would be inclusive of both licensed and non-licensed activities and areas. The NRC-approved DCGLs developed by ANL are used in the process. The DCGLs are used directly to determine the dose from each area to the receptor, which is the resident farmer as outlined in the ANL LTP. Ratios are used with the DCGLs that are based on 10 mrem/yr to determine what they would be for the NRC release criterion of 25 mrem/yr. The attached **Figure 1** is a flowchart of the Approach A process that is detailed step-by-step below.

Definitions

Site: A collection of Survey Units that is evaluated against the release criterion of 25 mrem/yr (e.g., Bldg. 803, DU Ammo Storage Igloos). It is assumed that each Site is independent of the others, and potential dose contributions within the Sites are not additive.

Survey Unit: An individual area within a Site from which data are grouped and evaluated statistically (e.g., Bldg. 803 Room 2, Igloo A1109).

Evaluation Process

Step 1: Identify Sites and Survey Units to be included in evaluation. Each Site is evaluated separately. Each Survey Unit within a Site potentially contributes to the dose at that Site.

Site	Number of Survey Units	Site	Number of Survey Units
DU Ammo Igloos	120	SEAD-12 Bldg. 807	9
Bldg 306	12	SEAD-12 Bldg. 809	1
Bldg 5	15	SEAD-12 Bldg. 810	20
Bldg 2073	3	SEAD-12 Bldg. 812	31
Bldg 2084	3	SEAD-12 Bldg. 813	8
Blgd 612	28	SEAD-12 Bldg. 814	6
Bldg 356	1	SEAD-12 Bldg. 815	19
SEAD-48 Interiors	19	SEAD-12 Bldg. 816	14

Site	Number of Survey Units	Site	Number of Survey Units
SEAD-48 Exteriors	11	SEAD-12 Bldg. 817	2
SEAD-12 Bldg. 800	3	SEAD-12 Bldg. 819	12
SEAD-12 Bldg. 802	26	SEAD-12 Bldg. 823	1
SEAD-12 Bldg. 803	7	SEAD-12 Bldg. 824	1
SEAD-12 Bldg. 804	6	SEAD-12 Bldg. 825	1
SEAD-12 Bldg. 805	1	SEAD-12 Bldg. 827	1
SEAD-12 Bldg. 806	9	SEAD-12 Exterior	11

Step 2: Identify the appropriate background among the following:

- Igloo C0912
- Bldg. 722
- Bldg. 2078
- Background soil used for SEAD-12 investigation

Step 3: For each Site, compare data from each Survey Unit with background (using WRS test).

- If Survey Unit is at or below background, the Survey Unit as a whole does not contribute to the dose (although individual measurement locations may contribute; *Step 8*).
- If a Survey Unit is above background, it will make a contribution to the total dose for the Site.

Step 4: For Survey Units that are above background, identify/calculate the appropriate $DCGL_W$ from the ANL LTP:

- Depleted Uranium Gross $DCGL_W$
- Pitchblende Ore Gross $DCGL_W$
- Individual Surface or Soil $DCGL_W$

Step 5: Conduct a comparison between the above-background Survey Unit data and the $DCGL_W$.

- If the Survey Unit data are above the $DCGL_W$, determine the cause of Survey Unit failure.

Step 6: For all Survey Units that are above background, use the average survey measurement and the following equation to determine the resultant Survey Unit dose. The Instrument Count $Rate_{DCGLw}$ is the count rate equivalent to the $DCGL_W$ and 10 mrem/yr:

$$\frac{Instrument\ Count\ Rate_{DCGL_W}}{10\,mrem/yr} = \frac{Average\ Count\ Rate}{Survey\ Unit\ Dose}$$

Step 7: Compare each individual measurement within the Survey Unit with the appropriate $DCGL_{EMC}$. If a measurement exceeds the $DCGL_{EMC}$, determine that location's dose contribution using the following equation:

$$\frac{Instrument\ Count\ Rate_{DCGL_{EMC}}}{10\,mrem/yr} = \frac{Individual\ Measurement}{Location\ Dose}$$

Step 8: For each Site, add the dose contributions from each Survey Unit within that Site.

- If the Survey Units within a Site are at or below background and all individual measurements are below the appropriate $DCGL_{EMC}$, the Site does not contain residual radioactivity above background and, as such, meets the release criterion.
- If the total dose contributions from above-background Survey Units and individual measurements within a Site are less than 25 mrem/yr, the Site meets the release criterion.
- If the total dose contributions from above-background Survey Units and individual measurements within a Site are greater than 25 mrem/yr, the Site does not meet the release criterion.
- It is assumed that effects are not additive between Sites at Seneca Army Depot.

Compliance Alternatives:

The following may be appropriate alternatives if one or more Sites do not meet the release criterion of 25 mrem/yr.

a) Average the dose over the surface area of the Survey Unit, Site, or multiple Sites (e.g.., if Building 800 Room 1 contributes a dose of 30 mrem/yr and has a surface area of $60m^2$, and the total surface area of Building 800 is 300 m^2, then the averaged dose over all of Bldg 800 would be 6 mrem/yr).

b) Average the dose over time for Sites with multiple Survey Units.

c) Reconsider the Survey Units assigned to each Site (e.g., divide the SEAD-12 exterior into individual Sites to be evaluated separately rather than additively).

Approach B:

This approach involves treating the sites currently listed under an active license differently than those not listed under a license. For those sites currently listed under a license, Approach A would be used. This would result in demonstrating that the currently licensed sites within SEDA meet the goal of having a TEDE below 25 mrem/yr to an average member of a critical group. However, Approach B would present the data from non-license related sites differently.

In discussing SEAD-48, the license termination report would explain the following:

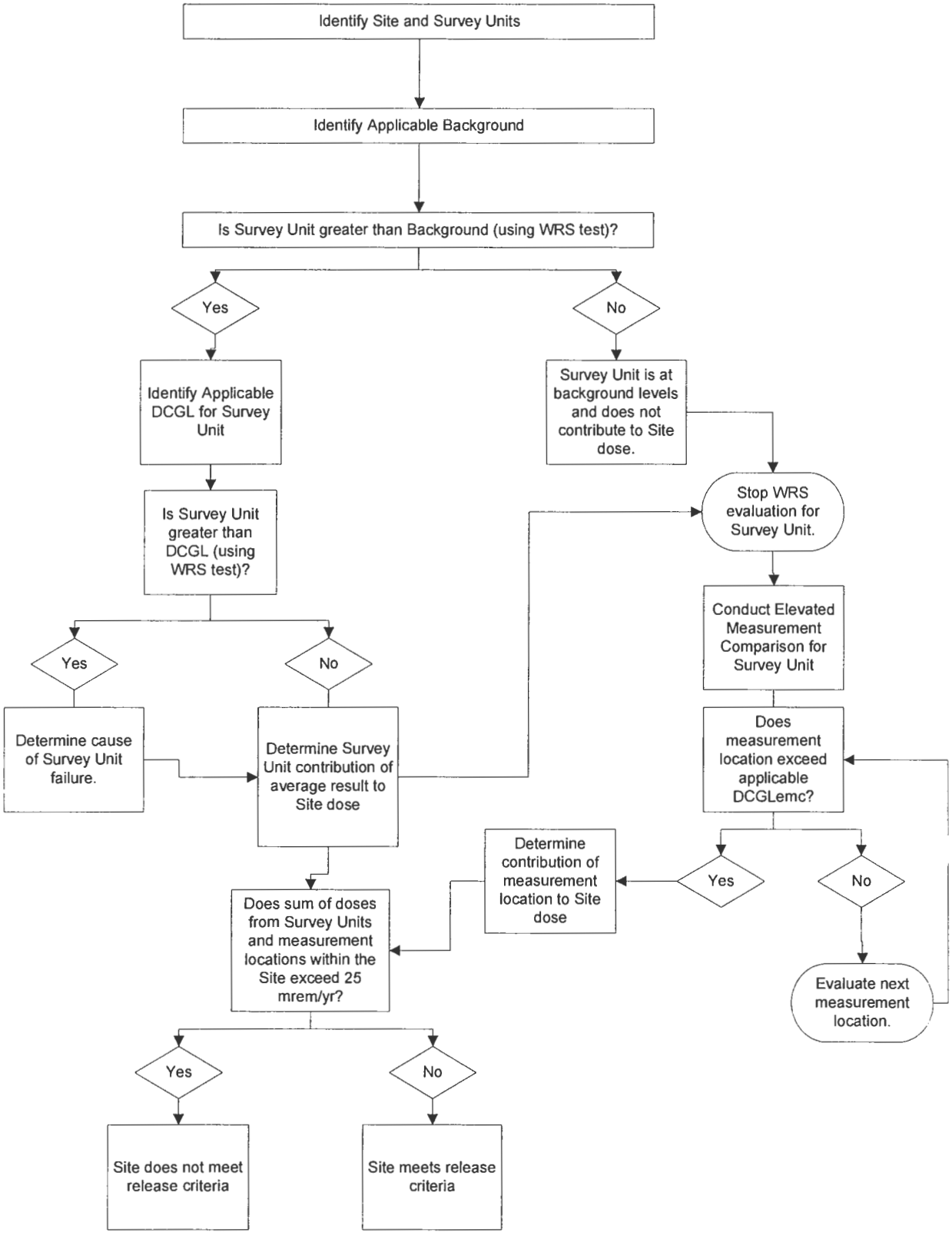
- NRC had previously released the site for unrestricted use
- Further investigation is being performed at this site and is being regulated by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (USEPA).
- Survey areas have been identified within SEAD-48 that do not meet the State's standard of 10 mrem/year. These areas are not related to commodities under the license and are being regulated by NYSDEC and USEPA

In discussing SEAD-12, the license termination report would explain the following:

- The site is currently in the CERCLA process under the authority of the USEPA and NYSDEC with the conservative release criteria of 10 mrem/yr being used. Since this dose is less then half of the NRC's 25 mrem/yr, there would be a minimal contribution, if at all, to any cumulative site wide dose.
- One area, EM-5, has been identified as having elevated levels of Pb-210. This is believed to be due to naturally occurring radiation and the Army is pursuing additional investigation of this site with NYSDEC and USEPA.
- Potentially elevated areas were identified at two locations - the crane in Building 819 and the shelf in Building 803. These areas are being addressed in coordination with NYSDEC and USEPA.

We'd like to discuss the approaches discussed in this memo with you at your earliest convenience. We are sensitive that while satisfying NRC's request for site-wide information, we not complicate the license termination process by involving a third agency at sites already under regulatory scrutiny. Please let us know if you would like us to set up a call for next week sometime.

Figure 1
Site/Survey Unit Evaluation Process
NRC License Termination
Seneca Army Depot Activity



PARSONS

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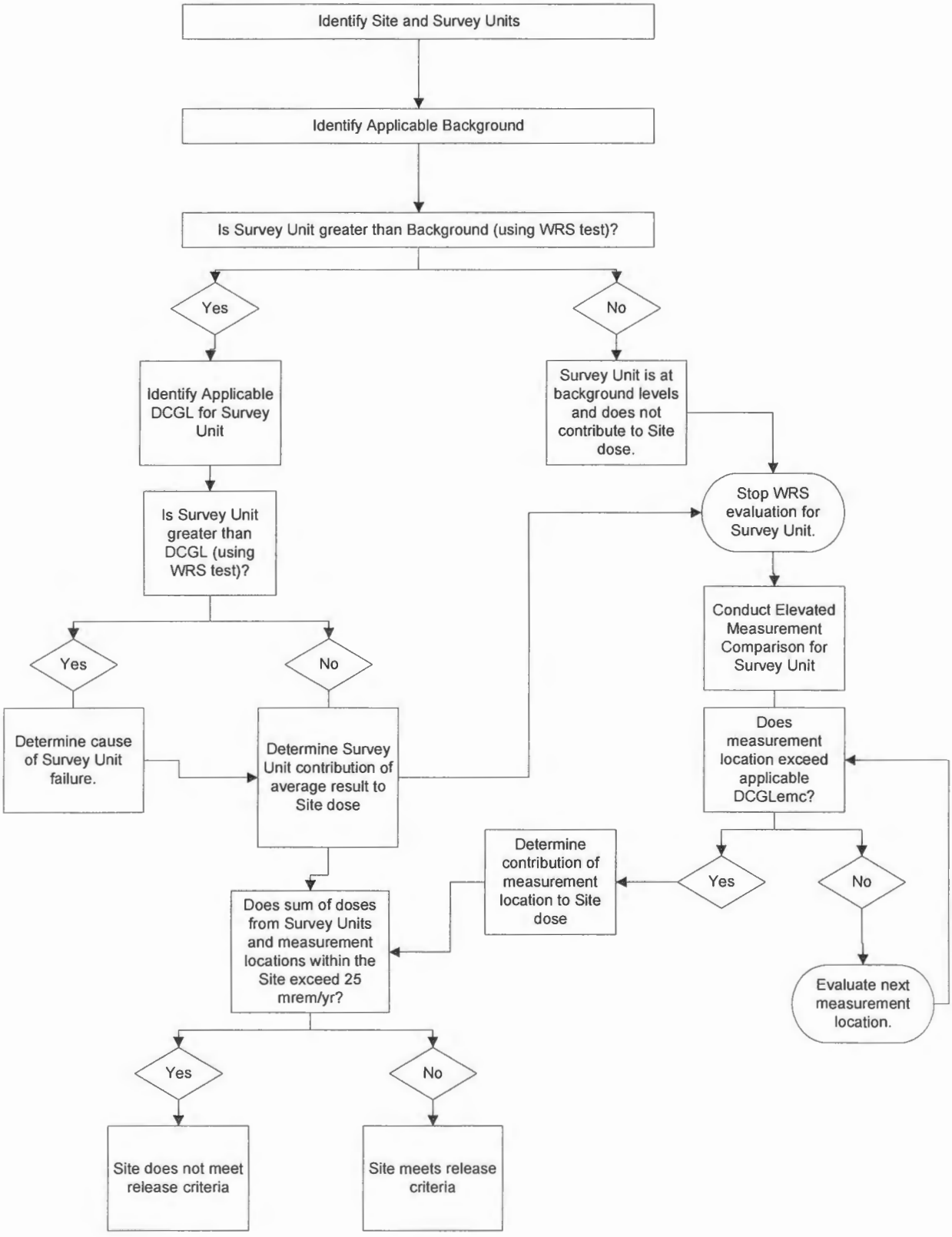

NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200
Washington, DC 20555-0001 E-mail: opa@nrc.gov
Web Site: www.nrc.gov

No. 02-120 October 10, 2002

NRC SIGNS MEMORANDUM OF UNDERSTANDING WITH EPA ON CLEANUP OF RADIOACTIVELY CONTAMINATED SITES

On October 9 the Nuclear Regulatory Commission signed an agreement with the Environmental Protection Agency on the radiological decommissioning and decontamination of NRC-licensed sites.

The Memorandum of Understanding (MOU) signed by NRC and EPA provides that EPA will defer exercise of authority under the Comprehensive Environmental Response, Compensation and Liability Act (Superfund) for the majority of facilities decommissioned under NRC authority. The MOU includes provisions for NRC and EPA consultation for certain sites when, at the time of license termination, (1) groundwater contamination exceeds EPA-permitted levels; (2) NRC contemplates restricted release of the site; and/or (3) residual radioactive soil concentrations exceed levels defined in the MOU.

The MOU responds to a 1999 report from the House Committee on Appropriations that stated: "In the interest of ensuring that sites do not face dual regulation, the Committee strongly encourages both agencies to enter into an MOU which clarifies the circumstances for EPA's involvement at NRC sites when requested by the NRC." The MOU also is responsive to a Government Accounting Office report issued in 2000.

The MOU does not fully meet the intent of the Appropriations Committee because the threat of dual regulation remains for certain licensees. Thus, although the MOU reduces dual jurisdiction, the NRC will continue efforts to seek legislation that would eliminate the possibility of dual regulation of all NRC decommissioning licensees.

The MOU does not impose any new requirements on NRC licensees and will reduce the involvement of EPA with NRC licensees who are decommissioning. Most sites are expected to meet the NRC criteria for unrestricted use, and NRC believes that only a few sites will have groundwater or soil contamination in excess of the levels specified in the MOU which trigger consultation with EPA. If there are other hazardous materials on the site, EPA may be involved in cleanup.

###

MEMORANDUM OF UNDERSTANDING BETWEEN THE ENVIRONMENTAL PROTECTION AGENCY AND THE NUCLEAR REGULATORY COMMISSION

CONSULTATION AND FINALITY ON DECOMMISSIONING AND DECONTAMINATION OF CONTAMINATED SITES

I. Introduction

The Environmental Protection Agency (EPA) and the Nuclear Regulatory Commission (NRC), in recognition of their mutual commitment to protect the public health and safety and the environment, are entering into this Memorandum of Understanding (MOU) in order to establish a basic framework for the relationship of the agencies in the radiological decommissioning and decontamination of NRC-licensed sites. Each Agency is entering into this MOU in order to facilitate decision-making. It does not establish any new requirements or rights on parties not subject to this agreement.

II. Purpose

The purpose of this MOU is to identify the interactions of the two agencies for the decommissioning and decontamination of NRC-licensed sites and to indicate the way in which those interactions will take place. Except for Section VI, addressing corrective action under the Resource Conservation and Recovery Act (RCRA), this MOU is limited to the coordination between EPA, when acting under its Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) authority, and NRC, when a facility licensed by the NRC is undergoing decommissioning, or when a facility has completed decommissioning, and the NRC has terminated its license. It continues a basic policy of EPA deferral to NRC decision-making in the decommissioning of NRC-licensed sites except in certain circumstances, and establishes the procedures to govern the relationship between the agencies in connection with the decommissioning of sites at which those circumstances arise.

III. Background

An August 3, 1999, report (106-286) from the House Committee on Appropriations to accompany the bill covering EPA's FY1999 Appropriations/FY 2000 budget request states:

> Once again the Committee notes that the Nuclear Regulatory Commission (NRC) has and will continue to remediate sites under its jurisdiction to a level that fully protects public health and safety, and believes that any reversal of the long-standing policy of the Agency to defer to the NRC for cleanup of NRC's licensed sites is not a good use of public or private funds. The interaction of the EPA with the NRC, NRC licensees, and others, with regard to sites being remediated under NRC regulatory requirements--when not specifically requested by the NRC--has created stakeholder concerns regarding the authority and finality of NRC licensing decisions, the duration and costs of site cleanup, and the potential future liability of parties associated with affected sites. However, the Committee recognizes that there may be circumstances at specific NRC licensed sites where the Agency's expertise may be of critical use to the NRC. In

> the interest of ensuring that sites do not face dual regulation, the Committee strongly encourages both agencies to enter into an MOU which clarifies the circumstances for EPA's involvement at NRC sites when requested by the NRC. The EPA and NRC are directed to report to the Committee on Appropriations no later than May 1, 2000, on the status of the development of such an MOU.

Since September 8, 1983, EPA has generally deferred listing on the CERCLA National Priorities List (NPL) those sites that are subject to NRC's licensing authority, in recognition that NRC's actions are believed to be consistent with the CERCLA requirement to protect human health and the environment. However, as EPA indicated in the Federal Register notice announcing the policy of CERCLA deferral to NRC, if EPA "determines that sites which it has not listed as a matter of policy are not being properly responded to, the Agency will consider listing those sites on the NPL" (see 48 FR 40658).

EPA reaffirms its previous 1983 deferral policy. EPA expects that any need for EPA CERCLA involvement in the decommissioning of NRC licensed sites should continue to occur very infrequently because EPA expects that the vast majority of facilities decommissioned under NRC authority will be decommissioned in a manner that is fully protective of human health and the environment. By this MOU, EPA agrees to a deferral policy regarding NRC decision-making without the need for consultation except in certain limited circumstances as specified in paragraphs V.C.2 and V.C.3.

One set of circumstances in which continued consultation should occur, pursuant to the procedures defined herein, relates to sites at which the NRC determines during the license termination process that there is radioactive ground-water contamination above certain limits. Pursuant to its License Termination rule, NRC applies a dose criterion that encompasses all pathways, including ground water. In its cleanup of sites pursuant to CERCLA, by contrast, EPA customarily establishes a separate ground-water cleanup standard in which it applies certain Maximum Contaminant Levels (MCLs, found at 40 CFR 141) promulgated for radionuclides and other substances pursuant to the Safe Drinking Water Act. NRC has agreed in this MOU to consult with EPA on the appropriate approach in responding to the circumstances at particular sites with ground-water contamination at the time of license termination in excess of EPA's MCLs or those sites for which NRC contemplates either restricted release or the use of alternate criteria for license termination, or radioactive contamination at the time of license termination exceeds the corresponding levels in Table 1 as provided in Section V.C.2.

IV. Principles

In carrying out their respective responsibilities, the EPA and the NRC will strive to:

1. Establish a stable and predictable regulatory environment with respect to EPA's CERCLA authority in and NRC's decommissioning of contaminated sites.
2. Ensure, to the extent practicable, that the responsibilities of the NRC under the AEA and the responsibilities of EPA under CERCLA are implemented in a coordinated and consistent manner.

V. Implementation

A. Scope

This MOU is intended to address issues related to the EPA involvement under CERCLA in the cleanup of radiologically contaminated sites under the jurisdiction of the NRC. EPA will continue its CERCLA policy of September 8, 1983, which explains how EPA implements deferral decisions regarding listing on the NPL of any sites that are subject to NRC's licensing authority. The NRC's review of sites under NRC jurisdiction indicates that few of these sites have radioactive ground-water contamination in excess of the EPA's MCLs. At those sites at which NRC determines during the license termination process that there is radioactive ground-water contamination above the relevant EPA MCLs, NRC will consult with EPA and, if necessary, discuss with EPA the use of flexibility under EPA's phased approach to addressing ground-water contamination. NRC has agreed in this MOU to consult with EPA on the appropriate approach in responding to the circumstances at particular sites where ground-water contamination will exceed EPA's MCLs, NRC contemplates either restricted release or the use of alternate criteria for license termination, or radioactive contamination at the time of license termination exceeds the corresponding levels in Table 1 as provided in Section V.C.2.

B. General

Each agency will keep the other agency generally informed of its relevant plans and schedules, will respond to the other agency's requests for information to the extent reasonable and practicable, and will strive to recognize and ameliorate to the extent practicable any problems arising from implementation of this MOU.

C. NRC Responsibilities

1. NRC will continue to ensure remediation of sites under its jurisdiction to a level that fully protects public health and safety.

2. For NRC-licensed sites at which NRC determines during the license termination process that there is radioactive ground-water contamination in excess of EPA's MCLs, or for which NRC contemplates either restricted release (10 CFR 20.1403) or the use of alternate criteria for license termination (10 CFR 20.1404), NRC will seek EPA's expertise to assist in NRC's review of a decommissioning or license termination plan. In addition, NRC will consult with EPA if either the planned level of residual radioactive soil concentrations in the proposed action or the actual residual level of radioactive soil concentrations found in the final site survey exceed the radioactive soil concentration in Table 1. With respect to all such sites, the NRC will consult with EPA on the application of the NRC decommissioning requirements and will take such action as the NRC determines to be appropriate based on its consultation with EPA. For example, if NRC determines during the license termination process that there will be radioactive ground-water contamination in excess of EPA's MCLs at the time of license termination, then NRC will discuss with EPA the use of flexibility under EPA's phased approach for addressing ground-water contamination. If NRC does not adopt recommendations provided by the EPA, NRC will inform EPA of the basis for its decision not to do so.

3. NRC will defer to EPA regarding matters involving hazardous materials not under NRC's jurisdiction.

D. EPA Responsibilities

1. If the NRC requests EPA's consultation on a decommissioning plan or license termination plan, EPA will provide, within 90 days of NRC's notice to EPA, written notification of its views on the matter.

2. Consistent with this MOU, EPA agrees to a policy of deferral to NRC decision making on decommissioning without the need for consultation on sites other than those presenting the circumstances described in Sections V.C.2 and V.C.3. The agencies will consult with each other pursuant to the provisions of this MOU with respect to those sites presenting the circumstances described in Sections V.C.2 and V.C.3. EPA does not expect to undertake CERCLA actions related to radioactive contamination at a site that has been decommissioned in compliance with the NRC's standards, including a site addressed under Section V.C.2, despite the agencies decision to engage in consultation on such sites. EPA's deferral policy, and its expectation of not taking CERCLA action, continues to apply to sites that are covered under Section V.C.2.

3. For NRC-licensed sites presenting the circumstances described in Section V.C.2 and for which NRC has not adopted the EPA recommendation, EPA will consult with NRC on any CERCLA actions EPA expects to take if EPA does not agree with the NRC's decision.

4. EPA will resolve any CERCLA concerns involving hazardous substances outside of NRC's jurisdiction at NRC licensed sites, including concerns involving hazardous constituents that are not under the authority of NRC. As provided in Section V.D.2, EPA under CERCLA will defer or consult with NRC as appropriate regarding matters involving AEA materials under NRC's jurisdiction.

E. Other Provisions

1. Nothing in this MOU shall be deemed to establish any right nor provide a basis for any action, either legal or equitable by any person, or class of persons challenging a government action or failure to act.

2. Each agency will appoint a designated contact for implementation of this MOU. The designated individuals will meet at least annually or at the request of either agency to review NRC-licensed sites that meet the criteria for consultation pursuant to Section V.C.2. The NRC designated contact is the Director, Office of Nuclear Materials Safety and Safeguards, and the EPA designated contact is the Director Office of Emergency and Remedial Response, or as each designee delegates.

3. This MOU will remain in effect until terminated by the written notice of either party submitted six months in advance of termination.

4. Within six months of the execution of this MOU, each party will revise its guidance to its Headquarters and Regional Offices to reflect the terms of this MOU.

5. If differences arise that cannot be resolved by senior EPA and NRC management within 90 days, then either senior EPA or NRC management may raise the issue to their respective agency head.

Section VI. Corrective Action under RCRA

Some NRC sites undergoing decommissioning may be subject to cleanup under RCRA corrective action authority. This authority, administered either by EPA or authorized states, requires cleanup of releases of hazardous waste or constituents at hazardous waste treatment, storage or disposal facilities. NRC sites subject to RCRA corrective action will be expected to meet RCRA cleanup standards for chemical contamination within EPA's jurisdiction. EPA Office of Solid Waste's policy is to encourage regional and State program implementers to coordinate RCRA cleanups with decommissioning, as appropriate, at those NRC sites subject to EPA's corrective action authority.[1]

EPA will continue to support coordination of cleanups under the RCRA corrective action program with decommissioning at NRC sites consistent with its March 5, 1997 policy. In addition, under RCRA the majority of States are authorized to implement the corrective action requirements. States are not signatories to this MOU; however, EPA will encourage States to act in accordance with this policy where they have responsibility for RCRA corrective action at NRC sites undergoing decommissioning.

Items 1 and 3 of the "Other Provisions" of Section V.E. apply to this section.

SEP 30 2002

Christine T. Whitman — Date
Administrator
US Environmental Protection Agency

October 9, 2002

Richard A. Meserve — Date
Chairman
US Nuclear Regulatory Commission

[1]See letter from Elizabeth Cotsworth, Acting Director, Office of Solid Waste to James R. Roewer, USWAG, dated March 5, 1997.

5. If differences arise that cannot be resolved by senior EPA and NRC management within 90 days, then either senior EPA or NRC management may raise the issue to their respective agency head.

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EPA will continue to support coordination of cleanups under the RCRA corrective action program with decommissioning at NRC sites consistent with its March 5, 1997 policy. In addition, under RCRA the majority of States are authorized to implement the corrective action requirements. States are not signatories to this MOU; however, EPA will encourage States to act in accordance with this policy where they have responsibility for RCRA corrective action at NRC sites undergoing decommissioning.

Items 1 and 3 of the "Other Provisions" of Section V.E. apply to this section.

Christine T. Whitman Date	Richard A. Meserve Date
Administrator	Chairman
US Environmental Protection Agency	US Nuclear Regulatory Commission

MOU Table 1: Consultation Triggers for Residential and Commercial/Industrial Soil Contamination

Except for radium-226, thorium-232, or total uranium, concentrations should be aggregated using a sum of the fraction approach to determine site specific consultation trigger concentrations. This table is based on single contaminant concentrations for residential and commercial/industrial land use when using generally accepted exposure parameters. Table users should select the appropriate column based on the site's reasonably anticipated land use.

Radionuclide	Residential Soil Concentration	Industrial/Commercial Soil Concentration
H-3	228 pCi/g	423 pCi/g
C-14	46 pCi/g	123,000 pCi/g
Na-22	9 pCi/g	14 pCi/g
S-35	19,600 pCi/g	32,200,000 pCi/g
Cl-36	6 pCi/g	10,700 pCi/g
Ca-45	13,500 pCi/g	3,740,000 pCi/g
Sc-46	105 pCi/g	169 pCi/g
Mn-54	69 pCi/g	112 pCi/g
Fe-55	269,000 pCi/g	2,210,000 pCi/g
Co-57	873 pCi/g	1,420 pCi/g
Co-60	4 pCi/g	6 pCi/g
Ni-59	20,800 pCi/g	1,230,000 pCi/g
Ni-63	9,480 pCi/g	555,000 pCi/g
Sr-90+D	23 pCi/g	1,070 pCi/g
Nb-94	2 pCi/g	3 pCi/g
Tc-99	25 pCi/g	89,400 pCi/g
I-129	60 pCi/g	1,080 pCi/g
Cs-134	16 pCi/g	26 pCi/g
Cs-137+D	6 pCi/g	11 pCi/g
Eu-152	4 pCi/g	7 pCi/g
Eu-154	5 pCi/g	8 pCi/g

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Radionuclide	Residential Soil Concentration	Industrial/Commercial Soil Concentration
Ir-192	336 pCi/g	544 pCi/g
Pb-210+D	15 pCi/g	123 pCi/g
Ra-226	5 pCi/g	5 pCi/g
Ac-227+D	10 pCi/g	21 pCi/g
Th-228+D	15 pCi/g	25 pCi/g
Th-232	5 pCi/g	5 pCi/g
U-234	401 pCi/g	3,310 pCi/g
U-235+D	20 pCi/g	39 pCi/g
U-238+D	74 pCi/g	179 pCi/g
total uranium	47 mg/kg	1230 mg/kg
Pu-238	297 pCi/g	1,640 pCi/g
Pu-239	259 pCi/g	1,430 pCi/g
Pu-241	40,600 pCi/g	172,000 pCi/g
Am-241	187 pCi/g	568 pCi/g
Cm-242	32,200 pCi/g	344,000 pCi/g
Cm-243	35 pCi/g	67 pCi/g

7.0 SURVEYS OF NON-LICENSED AREAS

As discussed in **Section 2.4**, there are two additional areas at SEDA (SEAD-12 and SEAD-48) where radiological activities were performed that are included in this report. SEAD-12 is the former Weapons Storage Area (WSA; also known as the "Q" area), located at the northern end of SEDA (**Figure 1-2**). SEAD-48 is a row of 11 storage igloos at the southern end of SEDA that were used to temporarily store uranium pitchblende ore. Both SEAD-12 and SEAD-48 are being investigated under the CERCLA program at SEDA, with work being reviewed by the USEPA, NYSDEC, and NYSDOH. To avoid the possibility of dual regulation, these two areas remain under the enforcement action of the USEPA, ~~not the NRC~~. The consistency between the USEPA and the NRC requirements and methodologies for cleanup and decommissioning allows for the evaluation of these areas with the 10 mrem/yr release criterion, the same as the evaluation presented for the licensed areas in this report. Although the activities performed in these areas do not involve commodities licensed by the NRC, the areas have been included in the License Termination Report because radiological investigations have been performed at both locations. The two areas are summarized briefly in this section in order to determine their contribution to a site dose.

7.1 SEAD-12

As noted above, SEAD-12 is the former WSA, consisting of 20 buildings and approximately 400 acres of surrounding grounds, as shown in **Figure 7-1**. Each building performed a specific function in the process of receiving, storing, maintaining, or shipping special weapons at the site (Parsons, 2003). MARSSIM protocols were implemented in the design and execution of the surveys at SEAD-12. Survey units were classified according to known activities within the buildings or grounds that were surveyed. **Table 7-1** summarizes the historical uses and MARSSIM classification of the SEAD-12 buildings.

Parsons conducted radiological surveys of both the interior and the exterior surfaces at SEAD-12. Exterior surveys and sampling at SEAD-12 were performed in 1997 and 1998 (Parsons, 2002). The interior surveys were conducted in two phases (**Table 7-1**). Phase I of the interior surveys, which consisted of Class 1 survey units, was performed between October 1999 and January 2000. Phase II of the interior surveys, which consisted of Class 2 and 3 survey units, was performed between June and August 2001 (Parsons, 2003).

Site-specific DCGLs for soils and building surfaces were developed in 1999 to correspond to the New York State 10 mrem/yr dose limit and were approved by USEPA, NYSDEC, and NYSDOH (Parsons, 2000). The DCGLs that were developed for SEAD-12 were more conservative than those developed in the LTP (ANL, 2003) for the same radionuclide (**Table 7-2**). Although the values of the DCGLs are different, both the SEAD-12 and LTP DCGLs are based on the release criterion of 10 mrem/yr.

As a result of the exterior surveys, none of the exterior areas at SEAD-12 were found to contribute to an above-background dose. One exterior area, EM-5, has been identified as having potentially-elevated concentrations of Pb-210 (Parsons, 2002). This is believed to be the result of naturally-occurring radiation and/or potential laboratory error, and the Army is currently pursuing additional

investigation of this site with NYSDEC and USEPA. No military activities have been reported at the EM-5 area (named after a subsurface anomaly designation) and no evidence of military debris was found during the RI investigation. Subsurface anomalies identified during the RI were identified as the foundation and remains of a 19th century farmstead. The location of EM-5 is shown on Figure 7-1.

The interior surveys performed at SEAD-12 identified potentially-elevated areas at two locations - a hotspot on a large overhead hoist/crane in Building 819, and a hotspot on a shelf in Building 803 (Parsons, 2003). Both hotspots are believed to be the result of radium paint contamination. The shelf was disposed of as low-level radioactive waste, and remediation and confirmation sampling of the spot on the crane is pending. These areas are being addressed in coordination with NYSDEC and USEPA. All interior areas at SEAD-12 meet the 10 mrem/yr release criterion based on comparison with the 1999 SEAD-12 DCGLs.

As noted in **Sections 1** and **2**, portions of SEAD-12 were transferred to the KidsPeace organization in 2001. Additional property within the SEAD-12 boundary was transferred in 2003.

7.2 SEAD-48

SEAD-48, which is located in the southern area of SEDA (**Figure 1-2**), consists of eleven ammunition storage igloos, Igloos E0801 though E0811 (**Figure 7-2**). The SEAD-48 igloos are located within the secured area along Igloo Road No. 39 (E0800 Row). The following provides a brief history of events at SEAD-48:

- During the 1940s, 1,823 barrels of pitchblende ore were stored in the Igloos E0804 through E0811 for approximately three months (ANL, 2001). Igloos E0801 through E0803 were not used for pitchblende ore storage.
- After removal of the pitchblende ore, Igloos E0804 through E0811 were used for storage of non-radioactive army munitions until the late 1970's (U.S. Army Belvoir Research Group, 1985). Igloo E0803 was also used for this purpose.
- Licensed DU commodities were stored in Igloos E0801 and E0802 under licenses SUC-1275 and SUC-1380 until the late 1970's (U.S. AMC, 1998; ANL, 2003). These igloos were included in the DU Storage Igloo surveys conducted in 2002 (**Section 3**).
- Expanded site investigations at SEAD-48 in 1976, 1980, and 1985 indicated that levels of Ra-226, U-234, U-235, and U-238 in the soil potentially presented risks to human health and to the environment (U.S Army Belvoir Research Group, 1985; Ford, Bacon, and Davis, Utah [FB&DU], 1981; U.S. Army Ballistic Research Laboratory, 1986).
- In July 1985, decontamination/remediation activities were performed by the Army inside and around the entrance pads to the SEAD-48 igloos (U.S. Army Belvoir R&D Center, 1985).
- The NRC conducted a follow-up post-remediation inspection in October, 1987 and subsequently released the site for unrestricted use in a May 2, 1988 letter (**Appendix 7.A**; ANL, 2001).

- Subsequent investigations conducted in 1993 by NYSDOH indicated that some areas within SEAD-48 potentially contained elevated levels of radioactive contamination (NYSDOH, 1993), particularly inside and around Igloo E0804 and Igloo E0808. This prompted the Army to plan further investigation of the area.
- USEPA and NYSDEC approved the SEAD-48 Work Plan submitted by the Army in March, 2003 (Parsons, 2003).

In order to demonstrate compliance with the current State of New York release criterion, Parsons conducted interior and exterior surveys of SEAD-48 in the summer of 2003 (Parsons, 2004). MARSSIM protocols were used in the design and execution of the SEAD-48 surveys. The DCGLs from the LTP (ANL, 2003) were used to determine a gross activity DCGL for pitchblende ore using expected activity fractions for naturally-occurring constituents (NCRP, 1987). The primary ROCs for SEAD-48 were Ra-226, Th-232, U-234, U-235, and U-238. Selected decay progeny of the ROCs (Th-230, Ra-228, Th-228, Pb-210, Pa-231, and Ac-227) are also included in the gross activity DCGL.

Interior surveys identified areas of residual contamination within Igloos E0804 and E0806. In-situ gamma spectroscopy and material sampling confirmed the contamination to be the result of elevated levels of uranium ore. Although these interior survey units meet the wide-area release criterion of 10 mrem/yr, these contaminated areas will likely be remediated prior to the site release to comply with ALARA requirements. All other interior surveys met the release criterion and had no hotspots (Parsons, 2004)

Four exterior survey units (Igloos E0804, E0805, E0806, and E0811) did not meet the wide-area release criterion of 10 mrem/yr. Each of these survey units had at least one identifiable area of residual contamination. In addition, Igloo E0810 met the wide-area release criterion, but had one hotspot. In order to meet the release criterion and/or ALARA, these areas will be remediated and the survey units resurveyed. All other exterior survey units met the release criterion of 10 mrem/yr and had no hotspots (Parsons, 2004).

The Draft SEAD-48 report is currently in the review cycle with USEPA, NYSDEC, and NYSDOH. Additional remediation and investigation activities will proceed pending the review of those agencies.

7.3 REMAINING AREAS

Other than at the areas listed above, additional non-licensed radiological activities did not take place at SEDA. Therefore, it is concluded that the remainder of SEDA is unaffected and levels of radioactivity are at natural background levels.

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@anl.gov]
Sent: Tuesday, May 25, 2004 5:06 PM
To: Kadlubak, Kathleen; Steve Absolom (E-mail); Enroth, Thomas R NAN02; John Cleary (E-mail); Sydelko, Thomas G.
Cc: Travers, Jacqueline; Heino, Todd; Hackett, John
Subject: RE: NRC License termination Report

Katie,

I don't want to hold you up any longer, so here's what I've got. Overall, the report looks quite good and thorough. I have no reservations about recommending it being submitted to NRC. I have only one comment of substance and few editorial comments. Also, I know you will be discussing the MOU issue tomorrow.

My main comment concerns Building 612. As I recall, there had previously been an issue, and perhaps some correspondence with NRC, regarding survey unit sizes in Bld 612. All survey units were designated as Class 1, but some exceeded the 100 m2 MARSSIM size limit guideline. It was my understanding that the resolution to the issue was to commit to re-evaluate the adequacy of the survey unit sizes in light of the Bld 612 results. That is, by demonstrating that a Class 2 survey unit designation could be supported and therefore that the survey unit size was a non-issue, as Class 2 survey units can be as large as 1000 m2. Such a conclusion certainly appears to be appropriate, but the issue is not mentioned in Sec 5.

Editorial comments:

P. iii: "Conclusions" is misspelled.

P. ix: In the first two references, "Argonne National Laboratory," not "Laboratories."

Tables 3-2, 4-2, and 5-2: Add "Instrument Equivalent" before "Derived Concentration Guideline Levels" in each table title.

Table 7-2: The table title and/or headers should indicate that both soil and building surface DCGLs are compared. Currently, the two can only be discerned by the units used.

Regards,

Kurt

-----Original Message-----
From: Kadlubak, Kathleen [mailto:Kathleen.Kadlubak@parsons.com]
Sent: Monday, May 24, 2004 1:19 PM
To: Steve Absolom (E-mail); Tom Enroth (E-mail); John Cleary (E-mail); Picel, Kurt C.; Sydelko, Thomas G.
Cc: Travers, Jacqueline; Heino, Todd; Hackett, John
Subject: NRC License termination Report

Hello all,
I have received comments on the NRC License Termination Report from John C., Steve, and Tom, and ANL is sending their comments tomorrow. Everyone has mentioned incorporating something from the MOU into the report conclusions for the non- licensed areas. As I interpret the MOU, it deals more with the EPA deferring to the NRC in dealing with NRC-licensed sites that also happen to be CERCLA sites, not the other way around. In looking around though, there have been a lot of

Enroth, Thomas R NAN02

From: John F.Cleary [john.f.cleary@us.army.mil]
Sent: Wednesday, May 19, 2004 7:20 AM
To: Kadlubak, Kathleen; Steve Absolom (E-mail); Enroth, Thomas R NAN02; Kurt Picel (E-mail); Tom Sydelko (E-mail)
Cc: Travers, Jacqueline; Heino, Todd; Hackett, John
Subject: Re: Draft NRC License Termination Report

Here's my 2 cents...

1. Last sentence on page 1-2, change "periodically" to "regularly" and add "...IAW the License." after "conducted".
2. On page 1-3, 2nd line, change "bunkers" to "igloos". Also, to be consistent, make same change anywhere else it occurs in document.
3. Also on page 1-3, line 13, change "...been locked and unoccupied,..." to "...locked, unoccupied, and under Licensee control."
4. Page 3-1, the beginning of 2nd paragraph of section 3.1, change "...partially buried and have..." to "...earth-covered, ground-level, and are of ...". This is a more accurate description.
5. In the conclusions, where there is a discussion of the areas not under the License, reference should be made to the agreement between USNRC and USEPA that speaks to areas subject to USEPA enforcement actions. I believe that this would further tie together or argument for release for unrestricted use all areas on the installation.

Other than these few recommended changes, the document is a good piece of work. Long time in coming, but 2004 might just be the year...one can only hope!!
Regards,
John

----- Original Message -----
From: "Kadlubak, Kathleen" <Kathleen.Kadlubak@parsons.com>
To: "Steve Absolom (E-mail)" <stephen.m.absolom@us.army.mil>; "Tom Enroth (E-mail)" <Thomas.R.Enroth@nan02.usace.army.mil>; "John Cleary (E-mail)" <john.f.cleary@us.army.mil>; "Kurt Picel (E-mail)" <kcpicel@anl.gov>; "Tom Sydelko (E-mail)" <tsydelko@900exch.dis.anl.gov>
Cc: "Travers, Jacqueline" <Jacqueline.Travers@parsons.com>; "Heino, Todd" <Todd.Heino@parsons.com>; "Hackett, John" <John.Hackett@parsons.com>
Sent: Tuesday, May 18, 2004 11:59 AM
Subject: Draft NRC License Termination Report

> To all:
>
> Attached is a zip file containing a draft version of the NRC License
> Termination Report for your review. The text and tables are all included;
> selected figured have been included. I have not attached all the figures or
> the appendices- please let me know if there are any you would like to see,
> and I will send. When this report is sent on to the NRC, it will not be
> labeled as 'draft' as they do not review drafts. Please review and let me
> know your comments. In addition, feel free to distribute this report to
> someone who I have not included and should be reviewing it before submittal.
>
> Please call or e mail with any questions or comments.
>
> Sincerely,
> Katie
>
>
>

Subject: Review of DRAFT NRC License Termination Plan

Reviewer: SM Absolom

1.Page 1-2(3rd para. Change Date from November to September.

2. Page 3-1 3rd Para. Change first sentence to read – The storage igloos are earth covered concrete structures.

3. Page 4-2 paragraph 4.2.2- please confirm the grid spacing is describe properly. I understood that smaller grids were used below 2 meters and larger ones were above.

4. Page 5-2 Para 5.2.2 why was gamma readings not available? This paragraph leaves one to question results.

5. Page 5-4 Para. 5.3.3- 2nd to last sentence to read - .....locations, these gamma measurements are not indicative of contamination. Paragraph needs to establish our position. No judgement or interpretation should remain; just our position.

6. Section 7.0 Surveys of NON Licensed Areas- A paragraph needs to be added to reference the MOA between EPA and NRC, summaries the importance to explain why CERCLA is an acceptable program to consider these sites under.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Following the evaluation process for determining if the SEDA facility is compliant with the release criteria as outlined in **Section 2**, and illustrated in **Figure 2-1**, each radiological area within SEDA has been investigated. Areas where activities were conducted under the NRC licenses listed in **Section 1** were divided into sites, and further divided into survey units. To determine if the release criterion of 10 mrem/yr has been met at each site, a contributing radiological dose at each survey unit was calculated and the doses within a site were added together. The results from these calculations are presented in **Sections 3** through **6** of this report, respective to the area associated with the licensed radiological activity. It was determined and reported in the corresponding tables that, although there were sites with datasets or measurements above background, there were no sites with a calculated dose that exceeded the release criteria of 10 mrem/yr. The doses calculated for each site where a licensed commodity was used is listed in **Table 8-1**.

In conclusion, there are no radiological sites where licensed commodities were used that exceed the release criteria. Sites impacted by activities involving non-licensed commodities and that exceeded the release criteria (i.e. area EM-5 within SEAD-12 and certain areas within SEAD-48) are being investigated and managed under the CERCLA program in conjunction with USEPA and NYSDEC. It is SEDA's position that these isolated areas should not impact the license termination since(1) site impacts do not appear to be connected to the use of licensed commodities and 2) management of these sites is being regulated under the CERCLA program. The USACOE, in meeting the USEPA/NYSDEC requirements, will also meet the NRC decommissioning requirements because these areas will be remediated and/or demonstrated to meet the same standard of release of 10 mrem/yr for unrestricted use as the sites where licensed activities occurred. Consequently, it is recommended that SEDA be released from all NRC licenses and sites where licensed commodities were stored or used be released for unrestricted use. Specifically, this includes:

- 120 storage igloos (see Table 3-1);
- Building 5;
- Building 306;
- Building 612;
- Building 2073;
- Building S-2084; and
- Warehouse 356.

The following is a list of the NRC licenses to terminate or to remove SEDA from, with the supporting conclusions for the license termination or release:

License SUC-1275: The main license being terminated involved activities related to the commodity DU at the 120 storage igloos, Building 5, Building 306, Building 2073, Building S-2084, Building 612, and Warehouse 356; these areas are presented in **Sections 3**, **4**, **5**, and **6**. It was determined that each of the sites that comprises each of the areas was below the release criteria of 10 mrem/yr (**Table 8-1**). Consequently, it is recommended that License SUC-1275 be terminated and the associated areas be released for unrestricted use.

License SUC-1380: This license is currently held by the US Army Field Support Command, Rock Island, IL, and is for the possession and storage of DU commodities. SEDA is currently listed on License SUC-1380 as a bulk quantity storage facility. Activities under this license were the same as for SUC-1275 and were conducted in the same locations listed under SUC-1275, (120 storage igloos, Building 5, Building 306, Building 2073, Building S-2084, Building 612, and Warehouse 356). As indicated above, there were no calculated doses for the associated igloos and buildings that exceed the release criteria of 10 mrem/yr (**Table 8-1**). Consequently, it is recommended that SEDA be removed from License SUC-1380 and the associated areas be released for unrestricted use.

License 45-16023-01NA: The U.S. Navy holds this license for storage of DU commodities. Since all areas used for the storage of licensed DU commodities have been shown to meet the release criteria of 10 mrem/yr, SEDA would like to confirm that the SEDA facility is no longer listed on this license, as available records indicate.

License SUB-834: The U.S. Army Aberdeen Test Center, Aberdeen Proving Ground, MD holds this license for the possession of natural uranium, natural thorium, and DU, for the purposes of evaluating and testing munitions and projectiles. Although it is believed that SEDA at one time was authorized to, did not actually store commodities under this license on the facility and has since been removed from the license. The locations known to have stored DU commodities under the other NRC licenses meet the release criteria. Consequently, it is recommended that SEDA be removed from this license, if still currently listed.

License BML 12-00722-07: The U.S. Army Field Support Command, Rock Island, IL currently holds this license for the possession of Pm-147 to be used with military rocket sighting systems. Army records indicate that only one igloo at SEDA, Igloo A0701, stored material controlled by this license. As indicated in **Table 3-5**, survey measurements from Igloo A0701 were below background. Consequently, it is recommended that Igloo A0701 be released for unrestricted use, and if not already done, SEDA be removed from the list of approved storage facilities for License BML 12-00722-07.

License STC-133: The DLA, Fort Belvoir, VA currently holds this license for the possession of uranium and thorium ores, including columbium and tantalum minerals, for use with the National Defense Stockpile. According to Army records, activities at SEDA under this license occurred at Warehouse 356, Section D. SEDA was removed from this license in 1994, following Army, NYSDEC/NYSDOH, and NRC confirmatory surveys (**Section 6**). The supporting documentation for the removal of SEDA as a storage facility under STC-133 is presented in **Appendix 1.F**. Review of the various surveys indicates that that contributing dose at Warehouse 356 would have not been greater than 1.62 mrem/yr. Consequently, Warehouse 356 meets the current release criterion of 10 mrem/yr, and no further investigation is necessary at this site.

In conclusion, the SEDA facility has performed the appropriate investigations for termination or release from the NRC licenses listed above and has demonstrated that any radiological doses above background are below the conservative 10 mrem/yr release criteria accepted by the NRC and based on the TAGM-4003 of 10 mrem/yr. It is the recommended that the SEDA be removed from all related licenses and be released for unrestricted use.

184-51

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96, P.O. BOX 9
ROMULUS, NEW YORK 14541-0009

September 2, 2004

REPLY TO
ATTENTION OF
Caretaker Office

Mr. James Kottan
U.S. Nuclear Regulatory Commission
Region 1
Division of Nuclear Materials Safety
Nuclear Materials Safety Branch 2
475 Allendale Road
King of Prussia, PA 19406-1415

SUBJECT: Response to Request for Additional Information Concerning NRC License Termination Report for Seneca Army Depot Activity (Control Number 135163)- letter from NRC dated August 9, 2004

Dear Mr. Kottan,

The United States Army is pleased to submit the additional information requested regarding the License Termination Report for Seneca Army Depot Activity (SEDA) in Romulus, New York. The NRC, in a letter dated August 9, 2004, made the request for additional information.

The goal of the License Termination Report for SEDA, which follows the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM; NRC, 2000) and other applicable guidance, is to demonstrate that the license termination requirements for NRC license SUC-1275 (NRC Docket No. 040-08526) have been met and to remove SEDA from Licenses SUC-1380, 45-16023-01NA, SUB-834, BML 12-00722-07, and STC-133.

Attached with this letter are revised Tables 3-11, 3-13, 4-10, 4-12, and 5-9 from the License Termination Report for SEDA. Please replace the tables submitted in the June 2004 Report with the revised tables.

We appreciate the opportunity to provide you with this additional information for a report that is of great importance to the United States Army. Should you have any questions regarding the document, please do not hesitate to contact me (607) 869-1235.

Sincerely,

Stephen M. Absolom

Stephen M. Absolom
Installation Manager

Response to Comments from the Nuclear Regulatory Commission

Subject: NRC License Termination Report
Seneca Army Depot Activity
Romulus, New York

Comments Dated: August 9, 2004

Date of Comment Response: September 2, 2004

General Comments:

Comment 1: This is in reference to your letter dated June 15, 2004 requesting to amend Nuclear Regulatory Commission License No. SUC-1275. In order to continue our review, we need the following additional information.

Response 1: Acknowledged.

Comment 2: In accordance with 10 CFR 2.390, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC website at http://www.nrc.gov/reading-rm.html.

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer mail to Mail Control No. 135163. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5214.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we shall assume that you do not wish to pursue your application.

Response 2: Acknowledged.

Specific Comments:

Comment 1: Your compliance approach does not appear to follow that recommended in MARSSIM. The null hypothesis recommended for use in MARSSIM is: "the residual radioactivity in the survey unit exceeds the release criteria." This statement directly addresses the issue of compliance with the DCGL, and requires significant evidence that the residual radioactivity in the survey unit is less than the DCGL to reject the null hypothesis and pass the survey unit. Distinguishability from background is not addressed under this hypothesis. Additionally, Appendix 1A of your submittal, License Termination and License Release Plan (LTP), Table 5-4, footnote 6, states that the alpha value in Table 5-4 is the acceptable level of Type I decision error, when the null hypothesis is that survey unit exceeds the clean-up standard. This statement is consistent with the recommended null hypothesis in

MARSSIM. Please discuss the statistical methods you used for determining compliance to the DCGLs relative to the null hypothesis recommended in MARSSIM and presented in Table 5-4 of your LTP. Also please provide the retrospective power curves.

Response 1: The MARSSIM guidance suggests two possible scenarios for a null hypothesis:

- Scenario A: Where the assumption for the null hypothesis is that the survey unit exceeds the release criterion.
- Scenario B: Where the assumption for the null hypothesis is that the survey unit is indistinguishable from background.

In determining compliance with the release criteria, it was decided that Scenario B would best fit the situation at SEDA because the background data exhibited variability and the primary radionuclides of concern (U-234, U-235, and U-238, as depleted uranium) were present in background. These criteria for use of Scenario B are based on recommendations by NUREG-1505 (NRC, 1998) and other references (Abelquist, 2001). Per NUREG-1505, a Kruskal-Wallis test was performed on the 2002 Igloo background data set that was collected from five unaffected concrete Igloos and used in the evaluation of the DU Storage Igloos (Section 3 of the LTR). Based on the alpha, beta, and gamma measurements from each of the five igloos and a test Type I (α) error of 0.05, the datasets collected from one type of material (i.e., concrete) demonstrated sufficient variability to warrant the use of Scenario B (see attached Table A). Additional background data collected at Building 722 (used in the evaluation of the DU Storage Building data) were collected from several different types of material (e.g., concrete, tile, wood) that also demonstrated significant variability.

In addition, previously conducted MARSSIM-based radiological surveys (at SEAD-12) and CERCLA-based chemical risk assessments at SEDA used the "indistinguishable from background" null hypothesis during the statistical analysis of data. The use of Scenario B maintains consistency with these previous investigations.

The statistical method that was used to accept or reject the null hypothesis followed that recommended in Section 8.4 of MARSSIM. Type I (α) and Type II (β) errors were both conservatively set to 0.05. In the License Termination Plan (LTP) for SEDA it was stated that the Type II (β) error would be 0.1; however, a Type II (β) error of 0.05 was used because a smaller β error increases the statistical power of a test (NUREG-1505). In addition, it is implied in Table 4-5 of the LTP that the Scenario A null hypothesis would be used; however, as stated above, Scenario B was used because of the background variability and for consistency with previous investigations. The statistical process used is detailed in Section 2.6 of the License Termination Report.

It is recognized that power curves can be useful in illustrating that an adequate number of measurements have been collected to support the acceptance of the null hypothesis. Based on the

above information, the standard deviations provided (see response to Specific Comment 4 below), and the abundance of sample measurements collected, it is believed that sufficient statistical power to support our conclusions has been provided. However, if after reviewing these responses, NRC still wishes to request retrospective power curves to further support that there was adequate statistical power to support our conclusions, they can be provided.

Comment 2: MARSSIM recommends that when gross activity DCGLs are used, an appropriate weighted total efficiency should be used for the radiological surveys. ***[A]*** Please provide the calculations for determining the weighted total efficiencies used for the radiological surveys. If weighted total efficiencies were not used, please provide the basis for not using weighted total efficiencies. ***[B]*** In addition, MARSSIM states that the total efficiency for survey instruments may be considered to represent the product of two factors, the instrument efficiency and the source efficiency. Please provide the instrument efficiencies and source efficiencies used in the determination of the total efficiencies for the radiation survey instruments used to perform the radiological surveys. If the total efficiencies [sic], please provide the basis for not using these efficiencies for determining the total efficiency.

Response 2: **[A]** Given the primary constituents of concern (i.e., depleted uranium) at the site, it is believed that weighted efficiencies would not be necessary. The U-238, U-235, and U-234 present in depleted uranium have similar decay characteristics (e.g., alpha emissions between 4.2 and 4.7 MeV, low-energy gamma emissions). The instrument efficiencies were calculated using the daily instrument response checks to similar energy and radiation type (Th-230 with alpha emission at 4.6-4.7 MeV and Am-241 gamma emissions at 13, 26.4, and 59.5 keV) and similar measurement geometry (approximately 1 cm [0.39 inches] for alpha/beta instruments and 1 inch [2.54 cm] for gamma instruments).

[B] Both the instrument and source efficiency were considered in the calculation of the MDA, as shown in Response 3 below. The source efficiency was assumed to be 0.54 for all radiation types, based on the example calculation for scanning on concrete surfaces in Section 6 of NUREG-1507 (NRC, 1997). Only the instrument efficiency was used in the conversion of DCGL from units of dpm/100cm^2 to cpm, per the example data evaluation described in MARSSIM Appendix A.

Comment 3: Please provide examples of the calculations for the MDAs presented in Tables 3-3, 4-3, 5-3, and 6-2.

Response 3: MDAs for direct and scanning measurements were calculated in an Excel spreadsheet (see attached Table B) for each instrument using the following equations from MARSSIM:

$$MDCR = d' \sqrt{b_i} \times (60/i)$$

$$MDA = \frac{MDCR}{\sqrt{p\varepsilon_i\varepsilon_s}\,\frac{probe\ area}{100\ cm^2}}$$

where:

$MDCR$ = minimum detectable count rate (cpm)

d' = index of sensitivity; for a correct detection rate of 95% and a false positive rate of 60%, d' is equal to 1.38.

b_i = background counts during observation interval i, using the average measurement from the background dataset appropriate to the site (e.g., igloos or buildings).

i = scanning observation interval, equal to 1 second for beta and gamma scanning and 2 seconds for alpha scanning (since alpha and beta scanning was performed simultaneously, the 2-second observation interval was used).

p = surveyor efficiency, equal to 0.5 for scanning and 1.0 for direct measurements.

ε_i = instrument-specific efficiency

ε_s = surface efficiency, equal to 0.54.

The direct measurement MDAs for all instruments were calculated using the above equations, but modified to reflect a 1-minute, rather than a 1- or 5-second, observation interval, and a surveyor efficiency of 100% rather than 50%. Both the scanning and direct measurement MDAs were calculated with a d' of 1.38, corresponding to a measurement true positive rate of 95% and a false positive rate of 60%, per MARSSIM (Section 6.7.2).

Comment 4: Please provide the method used to determine the mean cpm in Tables 3-11 and 4-10. Also please provide the standard deviation for these mean values.

Response 4: Upon review, the averages originally presented in Tables 3-11 and 4-10 were found to be incorrect because they did not report weighted averages. In the revised tables provided, for each survey grid that was scanned, a mean scanning measurement was determined by taking the average of the minimum and maximum scanning results. To determine a mean scanning measurement for the survey unit, the average of the individual survey grid averages was then calculated. The standard deviations of each mean survey unit scanning measurement were also calculated. Updated versions of Tables 3-11 and 4-10 have been attached to this letter.

Comment 5: ***[A]*** MARSSIM states that sample results should be reported along with their associated uncertainties. For smear sample results in Tables 3-13, 4-12, 5-9, and 6-5, please provide the uncertainties for the results and the standard deviation for the average results. ***[B]*** Also, for the sample results in Table 3-14 and 4-13, please define the reported uncertainties. For example, do they represent the counting uncertainty (at some confidence interval) or the total propagated uncertainty (at some confidence interval).

Response 5: [A] Smear samples for the DU Igloos (Table 3-13), the DU Buildings (Table 4-12), and Building 612 (Table 5-9) were analyzed by an offsite laboratory and the measurement uncertainties for the smear results were not reported. The standard deviations for the calculated survey unit averages have been added to their respective tables (the revised tables are attached). Standard deviations for the smears collected at Warehouse 356 (Table 6-5), which were analyzed on-site using a NMC gas-proportional counter, were not reported because the results were primarily all below the lower limit of detection (LLD). It should be noted that per MARSSIM (Section 8.5.3), smears were used as a diagnostic tool to determine if further investigation is necessary, not as a means of determining compliance with the release criteria.

[B] The uncertainties for the results listed in Table 3-14 and 4-13 are considered to be the total propagated uncertainty at a 95% confidence level.

Comment 6: [A] Section 5.3.3 of the report on page 5-3 states: "Per MARSSIM for Class 1 survey units all direct and scanning measurements from each building were compared directly with the $DCGL_{EMC}$ for DU". A following sentence in Section 5.3.3 states: "Scanning measurements from Building 612 were not available to perform the $DCGL_{EMC}$ comparison". Table 5-3 indicates that the instrumentation used for the survey of Building 612 included a floor monitor. However, no scanning measurements are included in the data tables for Section 5 of the report. Were scanning measurements made during the survey of Building 612? If so, please provide these measurements. [B] Table 5-3 also reports an efficiency of 0.75% for the FIDLER, resulting in a scanning MDA of 167,867 dpm/100cm2 which is above the DCGLW for DU. The FIDLER efficiencies presented in Table 3-3 and 4-3 are 15%. Please explain the difference in the FIDLER efficiencies.

Response 6: [A] The surveys for Building 612 were completed in 1999 by the Army Radiological Assistance Team and the data collected has been evaluated using the MARSSIM guidance. Although data logger printouts exist indicating possible alpha/beta scanning with the floor monitor and hand-held gas proportional instruments, the manner in which the scanning was performed cannot be verified, and it was determined that the data should not be used. Records indicate that gamma scanning was performed using the FIDLER; however, that data cannot be located. Based on the analysis for DU, no datasets from Building 612 exceeded the $DCGL_W$, and only one dataset was determined to be above background, contributing a dose of 0.6 mrem/yr. Without the FIDLER scanning data to evaluate, it is still believed that there is sufficient information to conclude that Building 612 meets the release criterion for unrestricted use.

[B] Both efficiencies cited in the comment were determined by the daily FIDLER response checks using an Am-241 source. The earlier surveys conducted in 1999 by the Army at Building 612 were performed by taking measurements at a distance of 1 foot (0.30 meters) from the surface. Consequently, the instrument checks during the Building 612 surveys were performed using a 1-foot

(0.30 meters) jig. For the subsequent surveys in 2002 at the DU Storage Igloos and DU Storage Buildings, measurements were taken at a distance of approximately 1 inch (2.54 cm) from the surface. The response check jig used during the 2002 surveys had a distance from the source of 1 inch (2.54 cm).

REFERENCES:

Abelquist, 2001. *Decommissioning Health Physics: A Handbook for MARSSIM Users*, Institute of Physics Publishing, Philadelphia, PA.

NRC, 1997. *Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions*, NUREG-1507, U.S. Nuclear Regulatory Commission, December.

NRC, 1998. *A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys*, NUREG-1505, U.S. Nuclear Regulatory Commission.

Table A
Kruskal-Wallis Test (per NUREG-1505)
(see Specific Comment-Response 1 from Response to Comments from the NRC Letter dated August 9, 2004)
License Termination Report
Seneca Army Depot Activity

Background Dataset	Reference Area	Average Measurement (cpm)	St Dev (cpm)	Sum of Ranks	Number of Measurements	K	k-1	Kc	K > Kc?
2002 Igloo Alpha	A1107	13.3	19	3800	30	75.1	4	9.5	Yes
	B0806	6.7	15	2841.5	30				
	C0912	1.8	2	1379.5	30				
	D0405	2.1	1	1771.5	30				
	E0403	2.8	6	1532.5	30				
2002 Igloo Beta	A1107	242.8	78.1	2682.5	30	12.5	4	9.5	Yes
	B0806	211.6	53.7	1935.5	30				
	C0912	204.7	39.1	1748.5	30				
	D0405	237.2	48.9	2669	30				
	E0403	215.1	42.1	2289.5	30				
2002 Igloo Gamma	A1107	6695.8	897.8	2150	30	73.9	4	9.5	Yes
	B0806	7002.2	843.2	2868.5	30				
	C0912	4616.1	518.3	620	30				
	D0405	7168.0	870.4	3309	30				
	E0403	6741.1	1009.9	2377.5	30				

K calculated using equation 13-3 from NUREG-1505
k-1 is based on k=5 datasets
Kc is from Table 13.1, NUREG-1505 for k-1=4 and an α of 0.05.
If K > Kc, the null hypothesis that there is no difference between the populations is rejected (i.e., variability exists between the datasets).

Table B
MDA Calculations
(see Specific Comment-Response 3 from Response to Comments from the NRC Letter dated August 92004)
License Termination Report
Seneca Army Depot Activity

Calculation for MDA per MARSSIM Section 6.7.2 for Alpha Phoswich

Value of d-prime 1.38
This is from Table 6.5 per MARSSIM example on page 6-41.
Therefore the true positive proportion is 95% and false positive percent is 60%.

	First Stage	Second Stage	Static 1 min	Static 10 min
Value of b sub i	0.17	0.42	5.00	50.00
Background Count Rate	5	5	5	5
Count time (sec)	60	60	60	60
Observ. Interval (sec)	2	5	60	600
Value of s sub i	0.56	0.89	3.09	9.76
MDCR (cpm)	17	11	3	1
MDCR Surveyor (cpm)	24	15	3	1
Instrument Efficiency	15%	15%	15%	15%
Surface Efficiency	0.54	0.54	0.54	0.54
Surveyor Efficiency	0.5	0.5	1	1
Probe Area (cm2)	75	75	75	75
MDCR Surveyor (dpm)	291	184	38	12
MDA (dpm/100cm2)	388	246	50	16

Calculation for MDA per MARSSIM Section 6.7.2 for Beta Phoswich

Value of d-prime 1.38
This is from Table 6.5 per MARSSIM example on page 6-41.
Therefore the true positive proportion is 95% and false positive percent is 60%.

	First Stage	Second Stage	Static 1 min	Static 10 min
Value of b sub i	3.70	18.50	222.00	2220.00
Background Count Rate	222	222	222	222
Count time (sec)	60	60	60	60
Observ. Interval (sec)	1	5	60	600
Value of s sub i	2.65	5.94	20.56	65.02
MDCR (cpm)	159	71	21	7
MDCR Surveyor (cpm)	225	101	21	7
Instrument Efficiency	11%	11%	11%	11%
Surface Efficiency	0.54	0.54	0.54	0.54
Surveyor Efficiency	0.5	0.5	1	1
Probe Area (cm2)	75	75	75	75
MDCR Surveyor (dpm)	3792	1696	346	109
MDA (dpm/100cm2)	5056	2261	462	146

Calculation for MDA per MARSSIM Section 6.7.2 for FIDLER

Value of d-prime 1.38
This is from Table 6.5 per MARSSIM example on page 6-41.
Therefore the true positive proportion is 95% and false positive percent is 60%.

	First Stage	Second Stage	Static 1 min	Static 10 min
Value of b sub i	108	542	6500	390000
Background Count Rate	6500	6500	6500	6500
Count time (sec)	60	60	60	60
Observ. Interval (sec)	1	5	60	3600
Value of s sub i	14.36	32.12	111.26	861.81
MDCR (cpm)	862	385	111	14
MDCR Surveyor (cpm)	1219	545	111	14
Instrument Efficiency	15%	15%	15%	15%
Surface Efficiency	0.54	0.54	0.54	0.54
Surveyor Efficiency	0.5	0.5	1	1
Probe Area (cm2)	126	126	126	126
MDCR Surveyor (dpm)	15047	6729	1374	177
MDA (dpm/100cm2)	11942	5341	1090	141

Table 3-11 (revised September 2004)
Summary of Igloo Scanning Results
DU Storage Igloos
License Termination Report
Seneca Army Depot Activity

Igloo	Number of Measurements	Alpha/Beta Scanning Minimum (cpm) [1,2]	Alpha/Beta Scanning Maximum (cpm)	Average of Alpha/Beta Scanning Mean (cpm)	Standard Deviation of Alpha/Beta Scanning Mean (cpm)	Is Maximum Reading Greater than Alpha/Beta Flag? [3]	Gamma Scanning Minimum (cpm)	Gamma Scanning Maximum (cpm)	Gamma Scanning Mean (cpm)	Standard Deviation of Gamma Scanning Mean	Is Maximum Reading Greater than Alpha/Beta Flag? [3]
A0201	30	100	340	236	48	No	1500	7000	4423	1077	No
A0316	30	80	340	208	38	No	1000	7000	4308	1251	No
A0317	30	80	340	210	41	No	2000	10000	6962	1677	No
A0508	30	60	400	201	46	No	2000	11000	7115	1816	No
A0701	30	60	380	201	42	No	1000	7000	4154	774	No
A0706	30	100	700	240	84	No	3000	10000	6962	1198	No
A0707	30	60	460	226	59	No	3000	11000	7346	987	No
A0710	30	100	460	242	49	No	2000	6000	4462	803	No
A0711	30	100	500	233	57	No	3000	10000	7038	1127	No
A0901	30	100	500	243	55	No	1800	6000	4223	850	No
A0905	30	100	480	249	63	No	1000	7000	4231	665	No
A1107	30	100	900	261	93	No	2000	8000	6423	1205	No
A1108	30	60	400	193	47	No	3000	8000	6500	1080	No
A1109	30	100	400	222	45	No	1000	7000	4231	927	No
B0109	30	80	360	192	42	No	3000	8000	6615	893	No
B0411	30	100	360	218	33	No	2000	7000	4077	732	No
B0501	30	60	300	178	34	No	1000	10000	6538	1738	No
B0602	30	80	360	190	35	No	3000	10000	6885	1044	No
B0603	30	80	360	195	41	No	3000	10000	7077	976	No
B0609	30	100	400	219	32	No	3000	10000	7231	1285	No
B0610	30	80	340	195	36	No	3000	10000	7038	1163	No
B0701	30	80	460	213	47	No	3000	11000	7154	1281	No
B0705	30	80	380	210	51	No	3000	10000	7000	1118	No
B0707	30	80	380	208	46	No	3000	10000	6654	774	No
B0708	30	80	300	178	29	No	2000	10000	6808	1164	No
B0709	30	40	360	202	47	No	2000	10000	6500	1258	No
B0711	30	80	340	202	29	No	3000	10000	7000	1080	No
B0801	30	100	280	188	18	No	1000	7000	4269	696	No
B0802	30	60	360	198	38	No	2000	7000	4154	516	No
B0804	30	100	380	202	33	No	1000	6000	4038	721	No
B0806	30	80	600	218	61	No	3000	10000	7115	870	No
B0809	30	80	600	230	89	No	3000	10000	6731	881	No
B0810	30	100	440	231	57	No	3000	10000	6923	1115	No
B0811	30	60	380	195	39	No	3000	10000	7269	1092	No
B0909	30	80	500	212	69	No	3000	11000	7308	1200	No
C0203	30	80	380	200	42	No	3000	10000	6769	1013	No
C0303	30	60	600	210	94	No	3000	9000	6385	1024	No
C0307	30	80	600	219	74	No	3000	9000	6462	1050	No
C0308	30	120	600	232	84	No	3000	10000	6769	971	No
C0401	30	80	600	204	95	No	3000	10000	7115	982	No
C0403	30	60	500	193	53	No	3000	11000	6962	1050	No
C0405	30	40	500	201	58	No	3000	9000	6615	939	No
C0406	30	100	500	218	63	No	3000	10000	6962	1163	No
C0407	30	80	440	195	47	No	3000	10000	6923	1058	No
C0408	30	40	300	182	26	No	3000	9000	6577	1115	No
C0501	30	80	300	174	21	No	3000	10000	6769	927	No
C0503	30	100	500	200	47	No	3000	10000	6962	877	No
C0504	30	100	300	186	29	No	3000	10000	6846	1028	No
C0505	30	100	500	198	52	No	3000	10000	6923	1058	No
C0508	30	80	500	191	55	No	3000	11000	6962	946	No

Table 3-11 (revised September 2004)
Summary of Igloo Scanning Results
DU Storage Igloos
License Termination Report
Seneca Army Depot Activity

Igloo	Number of Measurements	Alpha/Beta Scanning Minimum (cpm) [1,3]	Alpha/Beta Scanning Maximum (cpm)	Average of Alpha/Beta Scanning Mean (cpm)	Standard Deviation of Alpha/Beta Scanning Mean (cpm)	Is Maximum Reading Greater than Alpha/Beta Flag? [2]	Gamma Scanning Minimum (cpm)	Gamma Scanning Maximum (cpm)	Gamma Scanning Mean (cpm)	Standard Deviation of Gamma Scanning Mean	Is Maximum Reading Greater than Alpha/Beta Flag? [2]
C0510	30	80	600	202	65	No	3000	10000	6808	947	No
C0511	30	100	300	183	26	No	3000	9000	6038	967	No
C0513	30	40	300	172	33	No	3000	10000	6615	820	No
C0603	30	60	600	183	73	No	3000	10000	6577	838	No
C0604	30	80	600	186	68	No	2000	9000	6346	966	No
C0605	30	80	400	209	51	No	2000	9000	6500	1021	No
C0606	30	60	300	184	32	No	3000	9000	6346	899	No
C0608	30	60	420	193	44	No	2000	7000	5000	1137	No
C0701	30	80	600	193	71	No	3000	9000	6577	1058	No
C0706	30	80	600	194	65	No	3000	9000	6500	1000	No
C0707	30	80	320	204	36	No	3000	10000	6692	902	No
C0708	30	80	360	192	34	No	3000	10000	6846	1008	No
C0801	30	80	320	171	29	No	3000	10000	7154	1049	No
C0803	30	80	280	172	21	No	3000	9000	6538	989	No
C0807	30	80	320	188	29	No	3000	9000	6500	979	No
C0809	30	60	420	192	47	No	3000	9000	6654	1068	No
C0901	30	60	450	177	55	No	3000	9000	6962	1181	No
C0902	30	100	420	209	58	No	3000	10000	7038	1089	No
C0906	30	80	400	197	56	No	3000	11000	7192	1217	No
C0907	30	80	340	184	28	No	3000	9000	6654	1049	No
C0908	30	100	460	205	46	No	3000	10000	7077	1134	No
C0909	30	100	480	194	38	No	2000	7000	4423	813	No
C0912	30	40	420	201	41	No	2000	6000	4327	800	No
D0104	30	80	500	236	58	No	2000	7000	4038	721	No
D0105	30	100	420	216	39	No	2000	6000	3962	477	No
D0107	30	120	450	258	43	No	1000	10000	4577	1239	No
D0108	30	80	600	192	87	No	3000	9000	6577	1017	No
D0110	30	80	360	188	36	No	2000	6000	3808	522	No
D0113	30	40	400	199	41	No	3000	9000	6615	893	No
D0206	30	80	360	198	45	No	2000	6000	3962	431	No
D0207	30	80	440	218	59	No	2000	6000	4000	577	No
D0305	30	100	340	217	48	No	3000	10000	6923	932	No
D0306	30	80	400	188	46	No	3000	11000	7192	1128	No
D0312	30	80	340	198	35	No	2000	10000	6692	1234	No
D0401	30	80	400	197	43	No	2000	6000	3923	572	No
D0405	30	100	400	215	59	No	2000	11000	7115	1244	No
D0406	30	100	400	208	46	No	2000	11000	7385	1402	No
D0407	30	60	440	202	45	No	3000	10000	6731	949	No
D0413	30	100	400	208	61	No	3000	11000	7231	1268	No
D0601	30	100	400	207	46	No	3000	10000	7038	1145	No
D0604	30	100	400	235	35	No	3000	10000	6808	723	No
D0607	30	80	360	193	39	No	2000	6000	3885	506	No
D0704	30	100	440	191	43	No	3000	10000	7115	961	No
D0705	30	100	300	204	25	No	3000	10000	7115	1044	No
D0711	30	60	420	214	51	No	2000	6000	3808	522	No
D0712	30	60	420	206	49	No	1000	7000	4346	658	No
D0801	30	100	280	183	17	No	1000	6000	4115	768	No
D0805	30	100	420	229	35	No	2000	10000	6769	1317	No
E0103	30	80	600	212	51	No	2000	10000	7115	1227	No
E0105	30	100	600	234	89	No	2000	11000	7269	1467	No

Table 3-11 (revised September 2004)
Summary of Igloo Scanning Results
DU Storage Igloos
License Termination Report
Seneca Army Depot Activity

Igloo	Number of Measurements	Alpha/Beta Scanning Minimum (cpm) (1,2)	Alpha/Beta Scanning Maximum (cpm)	Average of Alpha/Beta Scanning Mean (cpm)	Standard Deviation of Alpha/Beta Scanning Mean (cpm)	Is Maximum Reading Greater than Alpha/Beta Flag? (3)	Gamma Scanning Minimum (cpm)	Gamma Scanning Maximum (cpm)	Gamma Scanning Mean (cpm)	Standard Deviation of Gamma Scanning Mean	Is Maximum Reading Greater than Alpha/Beta Flag? (3)
E0112	30	80	400	210	53	No	3000	10000	7000	1275	No
E0211	30	80	500	194	51	No	3000	11000	7077	1239	No
E0301	30	80	340	203	29	No	1000	7000	4231	665	No
E0302	30	60	400	212	46	No	3000	8000	6538	1145	No
E0303	30	100	420	191	57	No	2000	11000	7077	1397	No
E0312	30	60	380	179	43	No	2000	10000	6692	1109	No
E0402	30	80	340	185	27	No	3000	8000	6538	1145	No
E0403	30	80	440	212	44	No	2000	11000	7077	1718	No
E0410	30	80	400	196	43	No	2000	11000	7038	1520	No
E0411	30	80	300	185	30	No	1000	7000	4192	805	No
E0413	30	100	320	213	34	No	3000	9000	6731	1129	No
E0504	30	100	360	233	26	No	3000	10000	7000	1275	No
E0506	30	100	400	218	41	No	2000	11000	7038	1361	No
E0508	30	80	380	215	37	No	3000	10000	7154	1197	No
E0510	30	100	400	222	36	No	2000	12000	7423	1441	No
E0512	30	60	300	173	36	No	1000	7000	4231	971	No
E0602	30	100	1000	255	195	No	1000	6000	4192	663	No
E0604	30	100	600	232	84	No	1000	7000	4269	665	No
E0609	30	100	1200	278	222	No	1000	7000	4308	723	No
E0610	30	100	400	212	44	No	1000	7000	4423	838	No
E0702	30	80	460	214	50	No	1000	8000	4346	922	No
E0706	30	80	500	212	46	No	3000	8000	6462	1145	No
E0711	30	60	300	182	34	No	2000	8000	6269	1301	No
E0801	30	80	400	220	29	No	1000	7000	4346	689	No
E0802	30	100	380	227	44	No	1000	6000	4038	776	No

Notes:
(1) All Alpha/Beta measurements collected in the igloos were collected with a phoswich detector.
(2) cpm = counts per minute
(3) The scanning flag values for measurements in the Class 3 survey units are based on the gross activity DCGL for DU.
Average background is included in the flag value. The alpha/beta flag value, which is 6428 cpm for the phoswich detector, is the sum of the individual alpha and beta DU DCGLw's. The Gamma FIDLER flag value is 12465 cpm.

Table 3-13 (revised September 2004)
Summary of Smear Sampling Results [1, 2, 3]
DU Storage Igloos
NRC License Termination Report
Seneca Army Depot Activity

Igloo	Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)				Tritium Beta (dpm)			
		Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
A0201	30	0.0	0.2	0.5	1.4	0.0	0.9	1.8	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A0316	30	0.0	0.1	0.3	1.4	0.0	1.4	2.2	6.3	0.0	0.0	0.0	0.0	0.0	0.3	1.9	10.5
A0317	30	0.0	0.2	0.5	1.6	0.0	0.7	1.7	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A0508	30	0.0	0.2	0.4	1.2	0.0	0.7	1.5	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A0701	30	0.0	0.2	0.5	2.0	0.0	1.2	2.2	7.5	0.0	0.0	0.0	0.0	-- [5]	--	--	--
A0706	30	0.0	0.8	1.9	10.0	0.0	5.5	9.5	53.9	0.0	0.0	0.0	0.0	--	--	--	--
A0707	30	0.0	0.2	0.7	3.7	0.0	2.5	3.6	15.7	0.0	0.0	0.0	0.0	--	--	--	--
A0710	30	0.0	0.1	0.3	1.2	0.0	3.0	4.6	16.8	0.0	0.0	0.0	0.0	--	--	--	--
A0711	30	0.0	0.3	0.8	3.8	0.0	2.9	4.4	15.5	0.0	0.0	0.0	0.0	--	--	--	--
A0901	30	0.0	0.8	3.0	16.6	0.0	2.8	10.0	55.0	0.0	2.4	13.0	71.0	--	--	--	--
A0905	30	0.0	0.5	1.8	9.8	0.0	4.6	12.3	68.2	0.0	1.6	8.6	47.2	--	--	--	--
A1108	30	0.0	0.3	1.1	5.8	0.0	1.0	3.4	16.4	0.0	0.0	0.0	0.0	--	--	--	--
A1109	30	0.0	0.0	0.0	0.0	0.0	0.6	1.6	5.6	0.0	0.0	0.0	0.0	--	--	--	--
B0109	30	0.0	0.1	0.4	1.4	0.0	2.5	5.0	21.5	0.0	0.0	0.0	0.0	--	--	--	--
B0411	30	0.0	0.0	0.0	0.0	0.0	3.1	3.8	13.1	0.0	0.0	0.0	0.0	--	--	--	--
B0501	30	0.0	0.0	0.0	0.0	0.0	2.1	3.4	15.3	0.0	0.0	0.0	0.0	--	--	--	--
B0602	30	0.0	0.0	0.0	0.0	0.0	1.9	2.7	8.1	0.0	0.0	0.0	0.0	--	--	--	--
B0603	30	0.0	0.1	0.3	1.8	0.0	1.0	2.2	6.3	0.0	0.0	0.0	0.0	--	--	--	--
B0609	30	0.0	0.4	0.7	2.2	0.0	5.8	4.7	16.2	0.0	0.0	0.0	0.0	--	--	--	--
B0610	30	0.0	0.1	0.4	1.4	0.0	1.4	2.1	6.3	0.0	0.0	0.0	0.0	--	--	--	--
B0701	30	0.0	0.1	0.6	2.8	0.0	3.4	3.7	11.3	0.0	12.5	23.2	61.8	--	--	--	--
B0705	30	0.0	0.2	0.5	1.8	0.0	2.7	3.0	8.2	0.0	0.0	0.0	0.0	--	--	--	--
B0707	30	0.0	0.1	0.4	1.9	0.0	2.3	2.9	9.9	0.0	0.0	0.0	0.0	--	--	--	--
B0708	30	0.0	0.0	0.0	0.0	0.0	0.3	1.0	3.6	0.0	9.1	20.7	60.7	--	--	--	--
B0709	30	0.0	0.0	0.2	1.1	0.0	2.5	2.3	6.0	0.0	0.0	0.0	0.0	--	--	--	--
B0711	30	0.0	0.2	0.5	1.9	0.0	2.6	2.3	6.9	0.0	3.6	13.8	57.8	--	--	--	--
B0801	30	0.0	0.3	0.6	2.2	0.0	1.4	2.3	6.8	0.0	0.0	0.0	0.0	--	--	--	--
B0802	30	0.0	0.0	0.0	0.0	0.0	0.3	1.1	5.2	0.0	1.6	8.5	46.8	--	--	--	--
B0804	30	0.0	0.1	0.3	1.6	0.0	0.3	1.0	3.3	0.0	10.5	21.8	68.5	--	--	--	--
B0809	30	0.0	0.1	0.3	1.0	0.0	1.0	1.9	6.1	0.0	0.0	0.0	0.0	--	--	--	--
B0810	30	0.0	0.1	0.3	1.1	0.0	1.1	2.1	6.8	0.0	0.0	0.0	0.0	--	--	--	--
B0811	30	0.0	0.2	1.1	5.9	0.0	1.1	3.1	15.7	0.0	1.5	8.3	45.5	--	--	--	--
B0909	30	0.0	0.3	0.7	2.5	0.0	2.6	3.4	11.7	0.0	0.0	0.0	0.0	--	--	--	--
C0203	30	0.0	0.0	0.0	0.0	0.0	0.1	0.7	4.1	0.0	1.6	8.6	47.1	--	--	--	--
C0303	30	0.0	0.2	1.0	5.7	0.0	0.6	2.6	14.1	0.0	0.0	0.0	0.0	--	--	--	--
C0307	30	0.0	0.1	0.6	3.1	0.0	1.0	3.4	15.4	0.0	0.0	0.0	0.0	--	--	--	--

Table 3-13 (revised September 2004)
Summary of Smear Sampling Results [1, 2, 3]
DU Storage Igloos
NRC License Termination Report
Seneca Army Depot Activity

Igloo	Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)				Tritium Beta (dpm)			
		Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
C0308	30	0.0	0.2	0.6	2.3	0.0	1.7	3.1	14.6	0.0	1.5	8.1	44.1	--	--	--	--
C0401	30	0.0	0.0	0.0	0.0	0.0	0.4	1.1	3.8	0.0	0.0	0.0	0.0	--	--	--	--
C0403	30	0.0	0.2	0.8	4.3	0.0	0.9	2.6	12.2	0.0	3.4	13.0	55.0	--	--	--	--
C0405	30	0.0	0.1	0.5	2.6	0.0	0.3	1.0	4.0	0.0	0.0	0.0	0.0	--	--	--	--
C0406	30	0.0	0.0	0.0	0.0	0.0	0.3	1.0	4.3	0.0	0.0	0.0	0.0	--	--	--	--
C0407	30	0.0	0.2	0.8	4.1	0.0	1.0	3.5	18.1	0.0	0.0	0.0	0.0	--	--	--	--
C0408	30	0.0	0.0	0.0	0.0	0.0	0.3	1.1	4.8	0.0	5.0	15.3	57.1	--	--	--	--
C0501	30	0.0	0.2	0.7	3.1	0.0	1.0	2.1	7.8	0.0	1.5	8.2	45.0	--	--	--	--
C0503	30	0.0	0.5	2.0	10.3	0.0	1.2	4.9	26.2	0.0	3.4	13.0	51.6	--	--	--	--
C0504	30	0.0	0.1	0.5	2.5	0.0	0.2	1.1	6.1	0.0	0.0	0.0	0.0	--	--	--	--
C0505	30	0.0	0.0	0.0	0.0	0.0	0.4	2.4	13.1	0.0	11.1	20.5	57.2	--	--	--	--
C0508	30	0.0	0.0	0.0	0.0	0.0	0.2	0.8	4.6	0.0	3.5	13.1	54.5	--	--	--	--
C0510	30	0.0	0.1	0.7	3.9	0.0	1.1	4.2	22.3	0.0	1.5	8.3	45.6	--	--	--	--
C0511	30	0.0	0.0	0.2	1.3	0.0	0.3	1.2	5.6	0.0	2.2	11.8	64.8	--	--	--	--
C0513	30	0.0	0.0	0.0	0.0	0.0	0.3	1.2	5.6	0.0	3.8	14.5	65.4	--	--	--	--
C0603	30	0.0	0.1	0.3	1.9	0.0	0.1	0.6	3.5	0.0	0.0	0.0	0.0	--	--	--	--
C0604	30	0.0	0.3	1.3	7.2	0.0	2.6	6.2	32.3	0.0	0.0	0.0	0.0	--	--	--	--
C0605	30	0.0	0.1	0.6	3.4	0.0	4.9	7.6	27.4	0.0	0.0	0.0	0.0	--	--	--	--
C0606	30	0.0	0.6	1.7	9.0	0.0	2.6	3.4	11.0	0.0	3.5	13.3	57.9	--	--	--	--
C0608	30	0.0	0.2	0.6	2.9	0.0	3.2	4.6	21.8	0.0	3.2	12.3	50.2	--	--	--	--
C0701	30	0.0	0.2	0.5	1.7	0.0	0.8	1.5	4.4	0.0	2.1	11.7	63.9	--	--	--	--
C0706	30	0.0	0.0	0.2	1.1	0.0	0.9	1.7	4.7	0.0	0.0	0.0	0.0	--	--	--	--
C0707	30	0.0	0.1	0.4	1.5	0.0	1.7	2.0	4.7	0.0	0.0	0.0	0.0	--	--	--	--
C0708	30	0.0	0.1	0.4	1.5	0.0	0.9	1.7	4.7	0.0	0.0	0.0	0.0	--	--	--	--
C0801	30	0.0	0.4	0.7	2.5	0.0	1.9	2.2	5.9	0.0	1.7	9.3	50.8	--	--	--	--
C0803	30	0.0	0.4	0.7	2.9	0.0	2.8	2.4	7.4	0.0	6.4	16.6	54.6	--	--	--	--
C0807	30	0.0	0.4	0.9	4.0	0.0	2.8	2.9	11.8	0.0	1.9	10.2	55.7	--	--	--	--
C0809	30	0.0	0.2	0.5	2.1	0.0	1.5	2.3	7.8	0.0	0.0	0.0	0.0	--	--	--	--
C0901	30	0.0	0.3	0.6	1.7	0.0	2.1	4.0	19.5	0.0	0.0	0.0	0.0	--	--	--	--
C0902	30	0.0	0.4	0.9	3.2	0.0	3.9	2.9	9.4	0.0	0.0	0.0	0.0	--	--	--	--
C0906	30	0.0	0.1	0.4	1.3	0.0	1.1	2.0	6.8	0.0	1.8	9.6	52.8	--	--	--	--
C0907	30	0.0	0.1	0.4	1.7	0.0	0.9	1.7	5.0	0.0	0.0	0.0	0.0	--	--	--	--
C0908	30	0.0	0.2	0.7	2.9	0.0	2.3	4.3	21.1	0.0	0.0	0.0	0.0	--	--	--	--
C0909	30	0.0	0.6	0.7	2.1	0.0	2.7	5.3	26.8	0.0	0.0	0.0	0.0	--	--	--	--
D0104	30	0.0	0.1	0.7	3.7	0.0	0.6	1.7	6.7	0.0	0.0	0.0	0.0	--	--	--	--
D0105	30	0.0	0.0	0.0	0.0	0.0	0.3	1.1	5.3	0.0	0.0	0.0	0.0	--	--	--	--
D0107	30	0.0	0.4	1.6	8.9	0.0	1.3	5.4	29.3	0.0	1.6	8.6	47.2	--	--	--	--

Table 3-13 (revised September 2004)
Summary of Smear Sampling Results [1, 2, 3]
DU Storage Igloos
NRC License Termination Report
Seneca Army Depot Activity

Igloo	Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)				Tritium Beta (dpm)			
		Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
D0108	30	0.0	0.0	0.0	0.0	0.0	0.4	1.1	3.9	0.0	0.0	0.0	0.0	--	--	--	--
D0110	30	0.0	0.4	1.3	6.4	0.0	4.4	5.4	24.8	0.0	4.9	15.0	52.3	--	--	--	--
D0113	30	0.0	0.1	0.5	2.2	0.0	1.5	3.5	17.8	0.0	0.0	0.0	0.0	--	--	--	--
D0206	30	0.0	0.2	0.6	2.2	0.0	2.3	3.2	9.9	0.0	0.0	0.0	0.0	--	--	--	--
D0207	30	0.0	0.6	1.9	10.3	0.0	4.4	12.2	66.0	0.0	0.0	0.0	0.0	--	--	--	--
D0305	30	0.0	0.0	0.0	0.0	0.0	0.7	1.6	5.4	0.0	8.7	19.9	62.7	--	--	--	--
D0306	30	0.0	0.2	0.6	2.2	0.0	0.6	1.7	5.5	0.0	1.6	8.5	46.5	--	--	--	--
D0312	30	0.0	0.0	0.0	0.0	0.0	0.6	1.4	4.8	0.0	3.3	12.7	55.3	--	--	--	--
D0401	30	0.0	0.1	0.8	4.2	0.0	1.8	4.1	21.5	0.0	1.7	9.3	50.7	--	--	--	--
D0405	30	0.0	0.0	0.0	0.0	0.0	3.2	3.8	16.8	0.0	5.1	15.7	56.3	--	--	--	--
D0406	30	0.0	0.1	0.5	1.8	0.0	2.7	3.4	10.2	0.0	3.5	13.4	61.0	--	--	--	--
D0407	30	0.0	0.1	0.8	4.2	0.0	2.8	3.6	14.6	0.0	0.0	0.0	0.0	--	--	--	--
D0413	30	0.0	0.0	0.3	1.4	0.0	0.9	1.7	6.1	0.0	3.2	12.2	48.0	--	--	--	--
D0601	30	0.0	0.1	0.4	2.2	0.0	0.9	1.9	5.8	0.0	0.0	0.0	0.0	--	--	--	--
D0604	30	0.0	0.2	0.5	1.8	0.0	1.0	1.8	5.1	0.0	3.2	12.2	50.5	--	--	--	--
D0607	30	0.0	0.0	0.0	0.0	0.0	2.5	2.9	9.0	0.0	0.0	0.0	0.0	--	--	--	--
D0704	30	0.0	0.8	2.9	15.8	0.0	2.8	8.9	48.7	0.0	0.0	0.0	0.0	--	--	--	--
D0705	30	0.0	0.1	0.4	1.4	0.0	2.6	3.3	9.3	0.0	0.0	0.0	0.0	--	--	--	--
D0711	30	0.0	0.4	1.4	7.4	0.0	1.8	3.4	13.2	0.0	6.2	19.1	71.5	--	--	--	--
D0712	30	0.0	0.2	0.5	2.1	0.0	2.7	3.5	17.2	0.0	0.0	0.0	0.0	--	--	--	--
D0801	30	0.0	0.0	0.0	0.0	0.0	1.7	2.6	9.6	0.0	1.7	9.2	50.2	--	--	--	--
D0805	30	0.0	0.2	0.4	1.4	0.0	4.4	4.0	13.5	0.0	0.0	0.0	0.0	--	--	--	--
E0103	30	0.0	0.4	1.3	5.2	0.0	3.1	4.8	21.2	0.0	0.0	0.0	0.0	--	--	--	--
E0105	30	0.0	0.4	1.4	7.4	0.0	3.9	4.2	17.9	0.0	5.0	15.1	51.9	--	--	--	--
E0112	30	0.0	0.4	0.6	1.7	0.0	4.3	5.9	29.8	0.0	4.9	15.0	51.5	--	--	--	--
E0211	30	0.0	0.4	1.3	6.9	0.0	2.6	7.0	37.6	0.0	0.0	0.0	0.0	--	--	--	--
E0301	30	0.0	0.5	2.1	11.7	0.0	2.3	6.0	31.6	0.0	3.8	14.4	61.3	--	--	--	--
E0302	30	0.0	0.5	0.7	2.2	0.0	2.8	3.7	10.5	0.0	3.1	11.9	47.1	--	--	--	--
E0303	30	0.0	0.3	0.6	1.8	0.0	3.7	3.4	10.5	0.0	0.0	0.0	0.0	--	--	--	--
E0312	30	0.0	0.6	2.1	11.4	0.0	4.9	13.3	73.8	0.0	1.9	10.3	56.2	--	--	--	--
E0402	30	0.0	0.2	0.6	2.4	0.0	2.7	5.7	28.0	0.0	0.0	0.0	0.0	--	--	--	--
E0410	30	0.0	0.3	0.6	2.4	0.0	4.7	5.8	20.3	0.0	0.0	0.0	0.0	--	--	--	--
E0411	30	0.0	0.3	0.9	4.4	0.0	3.1	4.9	21.8	0.0	0.0	0.0	0.0	--	--	--	--
E0413	30	0.0	0.2	0.4	1.7	0.0	2.5	3.2	10.7	0.0	1.8	9.9	54.2	--	--	--	--
E0504	30	0.0	0.2	0.8	3.9	0.0	3.6	3.9	14.8	0.0	0.0	0.0	0.0	--	--	--	--
E0506	30	0.0	0.2	0.4	1.0	0.0	2.3	4.0	16.7	0.0	0.0	0.0	0.0	--	--	--	--
E0508	30	0.0	0.5	1.1	5.2	0.0	3.7	5.1	22.8	0.0	0.0	0.0	0.0	--	--	--	--

Table 3-13 (revised September 2004)
Summary of Smear Sampling Results [1, 2, 3]
DU Storage Igloos
NRC License Termination Report
Seneca Army Depot Activity

Igloo	Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)				Tritium Beta (dpm)			
		Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
E0510	30	0.0	0.9	3.4	18.4	0.0	6.7	23.6	130.1	0.0	7.0	18.4	65.1	--	--	--	--
E0512	30	0.0	0.4	0.8	3.2	0.0	2.9	3.0	9.2	0.0	3.8	14.5	64.6	--	--	--	--
E0602	30	0.0	1.2	3.4	16.5	0.0	5.5	9.1	37.7	0.0	4.4	17.0	77.0	--	--	--	--
E0604	30	0.0	0.1	0.3	1.7	0.0	1.2	2.0	5.9	0.0	1.8	9.7	53.2	--	--	--	--
E0609	30	0.0	0.9	4.1	22.4	0.0	4.0	12.3	67.0	0.0	0.0	0.0	0.0	--	--	--	--
E0610	30	0.0	0.5	1.7	9.1	0.0	6.7	7.5	35.5	0.0	1.9	10.2	55.9	--	--	--	--
E0702	30	0.0	0.1	0.4	2.3	0.0	2.1	3.6	15.0	0.0	1.8	9.9	54.3	--	--	--	--
E0706	30	0.0	0.2	0.6	2.7	0.0	2.7	4.7	22.2	0.0	0.0	0.0	0.0	--	--	--	--
E0711	30	0.0	0.3	0.5	1.9	0.0	1.0	1.9	5.8	0.0	0.0	0.0	0.0	--	--	--	--
E0801	30	0.0	0.3	0.6	1.9	0.0	0.6	1.7	5.8	0.0	0.0	0.0	0.0	--	--	--	--
E0802	30	0.0	0.3	0.5	1.6	0.0	1.4	2.5	8.0	0.0	0.0	0.0	0.0	--	--	--	--

Notes:

(1) 10 CFR 835, Appendix D, removable contamination limits: natural U, U-235, U-238, and assoc. decay products - 1,000 dpm/100cm^2; Tritium - 10,000 beta-gamma/100cm^2.

(2) Smear samples collected over a 100 cm^2 area.

(3) The reported detection limits ranged from 2-6 dpm for alpha measurements, 6-8 dpm for beta measurements, 85-93 dpm for gamma measurements, and 21.2 dpm for tritium measurements.

(4) dpm = disintegrations per minute.

(5) "--" = Tritium smears were not collected at this survey unit.

Table 4-10 (revised September 2004)
Summary of Building Scanning Results
DU Buildings
License Termination Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)	Measurement Type	Number of Grids Scanned	Scanning Minimum (cpm)	Scanning Maximum (cpm)	Average of Scanning Mean (cpm)	Standard Deviation of Scanning Mean (cpm)	Flag Value (cpm)	Maximum Reading Greater than Flag?
ALPHA/BETA FLOOR MONITOR								
5	1 Alpha/Beta	53	300	1200	609	113	32339	No
5	2 Alpha/Beta	14	200	1300	654	117	32339	No
5	3 Alpha/Beta	11	300	900	627	61	32339	No
5	4 Alpha/Beta	11	400	900	659	58	32339	No
5	5 Alpha/Beta	30	400	900	657	64	32339	No
5	6 Alpha/Beta	30	300	1000	645	79	32339	No
5	7 Alpha/Beta	7	600	1100	814	48	32339	No
5	8 Alpha/Beta	13	400	1300	785	149	32339	No
5	9 Alpha/Beta	27	300	1000	685	88	32339	No
5	10 Alpha/Beta	16	400	1200	744	83	32339	No
5	16 Alpha/Beta	8	400	1200	744	105	32339	No
306	10 Alpha/Beta	23	300	1400	643	125	32339	No
306	11 Alpha/Beta	18	300	1200	603	117	32339	No
306	12 Alpha/Beta	42	300	1200	589	89	32339	No
306	13 Alpha/Beta	21	400	1200	660	103	32339	No
2073	1 Alpha/Beta	56	200	900	563	83	32339	No
2073	3 Alpha/Beta	32	200	800	500	97	32339	No
2084	2 Alpha/Beta	20	200	800	615	110	32339	No
2084	3 Alpha/Beta	74	200	1000	572	116	32339	No
2084	6 Alpha/Beta	15	200	800	473	112	32339	No
ALPHA/BETA PHOSWICH								
5	1 Alpha/Beta	32	80	400	176	33	6571	No
5	2 Alpha/Beta	6	80	300	182	32	6571	No
5	3 Alpha/Beta	6	100	380	193	32	6571	No
5	4 Alpha/Beta	6	100	400	222	43	6571	No
5	5 Alpha/Beta	59	40	300	151	23	6571	No
5	6 Alpha/Beta	18	80	280	165	19	6571	No
5	7 Alpha/Beta	17	80	460	247	64	6571	No
5	8 Alpha/Beta	8	100	420	258	50	6571	No
5	9 Alpha/Beta	32	80	320	173	20	6571	No
5	10 Alpha/Beta	9	100	480	220	61	6571	No
5	11 Alpha/Beta	2	100	240	170	28	6571	No
5	12 Alpha/Beta	2	120	380	240	42	6571	No
5	13 Alpha/Beta	4	100	300	193	19	6571	No
5	14 Alpha/Beta	2	80	380	195	78	6571	No
5	15 Alpha/Beta	2	140	380	245	35	6571	No
5	16 Alpha/Beta	5	120	460	238	55	6571	No
306	1 Alpha/Beta	5	60	240	148	16	6571	No
306	2 Alpha/Beta	4	60	300	160	37	6571	No
306	3 Alpha/Beta	1	100	320	210	156	6571	No
306	4 Alpha/Beta	1	180	320	250	99	6571	No
306	5 Alpha/Beta	2	140	400	240	42	6571	No
306	6 Alpha/Beta	3	120	380	247	6	6571	No
306	7 Alpha/Beta	6	100	300	202	19	6571	No
306	8 Alpha/Beta	3	100	360	200	30	6571	No
306	10 Alpha/Beta	18	60	480	184	53	6571	No
306	11 Alpha/Beta	28	60	300	161	19	6571	No
306	12 Alpha/Beta	47	60	300	154	17	6571	No
306	13 Alpha/Beta	21	60	800	195	119	6571	No
2073	1 Alpha/Beta	67	80	300	166	22	6571	No
2073	2 Alpha/Beta	25	60	340	195	29	6571	No
2073	3 Alpha/Beta	31	40	260	157	17	6571	No
2084	2 Alpha/Beta	14	60	220	137	18	6571	No
2084	3 Alpha/Beta	99	40	280	134	20	6571	No
GAMMA FIDLER								
5	1 Gamma	85	2000	14000	5253	1654	17285	No
5	2 Gamma	20	2000	15000	6738	2203	17285	No
5	3 Gamma	17	2000	7000	4368	531	17285	No
5	4 Gamma	17	2000	10000	4824	814	17285	No
5	5 Gamma	89	2000	10000	4480	715	17285	No
5	6 Gamma	48	2000	10000	5182	1345	17285	No
5	7 Gamma	24	2000	16000	8344	2511	17285	No
5	8 Gamma	21	4000	15000	9024	2159	17285	No
5	9 Gamma	59	2000	10000	5140	1507	17285	No
5	10 Gamma	25	3200	13000	6554	1809	17285	No
5	11 Gamma	2	5000	11000	8500	2121	17285	No

Table 4-10 (revised September 2004)
Summary of Building Scanning Results
DU Buildings
License Termination Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)	Measurement Type	Number of Grids Scanned	Scanning Minimum (cpm)	Scanning Maximum (cpm)	Average of Scanning Mean (cpm)	Standard Deviation of Scanning Mean (cpm)	Flag Value (cpm)	Maximum Reading Greater than Flag?
GAMMA FIDLER (Continued)								
5	12 Gamma	2	8000	13000	10500	0 (3)	17285	No
5	13 Gamma	4	4000	9000	6000	408	17285	No
5	14 Gamma	2	3000	7000	5000	0 (3)	17285	No
5	15 Gamma	2	5000	12000	8750	1768	17285	No
5	16 Gamma	13	3000	13000	7769	1666	17285	No
306	1 Gamma	5	6000	12000	9200	758	17285	No
306	2 Gamma	4	5000	11000	8000	913	17285	No
306	3 Gamma	1	7000	12000	9500	3536	17285	No
306	4 Gamma	1	8000	12000	10000	2828	17285	No
306	5 Gamma	2	5000	10000	7500	0 (3)	17285	No
306	6 Gamma	3	6000	10000	8333	289	17285	No
306	7 Gamma	6	4000	11000	6667	1033	17285	No
306	8 Gamma	3	4000	9000	6333	289	17285	No
306	10 Gamma	41	3000	13000	6510	1613	17285	No
306	11 Gamma	46	3000	10000	6239	861	17285	No
306	12 Gamma	89	2000	12000	5242	1429	17285	No
306	13 Gamma	42	2000	9000	4764	1113	17285	No
2073	1 Gamma	123	1000	8000	3809	816	17285	No
2073	2 Gamma	25	2000	8000	5040	776	17285	No
2073	3 Gamma	63	3000	8000	5083	447	17285	No
2084	2 Gamma	34	2000	8000	5250	448	17285	No
2084	3 Gamma	173	1000	8000	3893	788	17285	No
2084	6 Gamma	15	3000	7000	4933	458	17285	No

Notes:
(1) cpm = counts per minute.
(2) The scanning flag values for measurements in the Class 2 and 3 survey units are based on the gross activity DCGL for DU. Average background is included in the flag value. The alpha/beta flag values are the sum of the individual alpha and beta DU DCGLw's for that instrument (Table 4-4).
(3) Two survey grids were scanned with this instrument and each had the same range and average measurement; therefore, the standard deviation for the average scanning measurment for this survey unit is zero.

Table 4-12 (revised September 2004)
Summary of Smear Sampling Results [1,2,3]
DU Buildings
NRC License Termination Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)		Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)			
			Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
5	1	85	0.0	0.1	0.3	1.9	0.0	0.1	0.6	4.8	0.0	7.1	17.9	67.6
5	2	20	0.0	0.0	0.2	0.9	0.0	0.6	1.1	3.0	0.0	0.0	0.0	0.0
5	3	17	0.0	0.0	0.0	0.0	0.0	0.4	1.0	3.3	0.0	3.1	12.7	52.5
5	4	17	0.0	0.1	0.2	0.9	0.0	0.2	0.8	3.3	0.0	0.0	0.0	0.0
5	5	89	0.0	0.0	0.0	0.0	0.0	0.3	1.0	5.1	0.0	0.0	0.0	0.0
5	6	48	0.0	0.0	0.0	0.0	0.0	0.1	0.5	3.8	0.0	2.1	10.0	52.5
5	7	24	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	8	21	0.0	0.0	0.0	0.0	0.0	0.5	1.3	4.0	0.0	0.0	0.0	0.0
5	9	63	0.0	0.2	0.5	2.0	0.0	0.4	1.3	5.4	0.0	8.9	19.7	64.1
5	10	25	0.0	0.5	0.7	2.0	0.0	0.4	1.2	3.7	0.0	0.0	0.0	0.0
5	11	28	0.0	0.0	0.0	0.0	0.0	0.4	1.2	4.1	0.0	1.7	9.1	48.3
5	12	32	0.0	0.1	0.3	1.6	0.0	0.2	0.8	3.2	0.0	4.2	13.3	45.5
5	13	30	0.0	0.0	0.0	0.0	0.0	0.2	0.9	3.7	0.0	6.3	16.2	50.7
5	14	30	0.0	0.1	0.3	1.6	0.0	0.1	0.7	4.1	0.0	1.5	8.1	44.4
5	15	30	0.0	0.1	0.3	0.9	0.0	0.1	0.7	3.7	0.0	0.0	0.0	0.0
5	16	13	0.0	0.2	0.5	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
306	1	30	0.0	0.0	0.2	1.1	0.0	1.1	1.6	4.9	0.0	0.0	0.0	0.0
306	2	30	0.0	0.2	0.5	1.8	0.0	0.1	0.6	3.3	0.0	0.0	0.0	0.0
306	3	30	0.0	0.0	0.2	1.1	0.0	0.4	1.2	4.3	0.0	0.0	0.0	0.0
306	4	30	0.0	0.1	0.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
306	5	30	0.0	0.3	0.6	1.8	0.0	0.2	0.9	3.6	0.0	5.2	15.8	55.2
306	6	30	0.0	0.1	0.3	1.1	0.0	0.8	1.5	4.6	0.0	0.0	0.0	0.0
306	7	30	0.0	0.1	0.3	1.4	0.0	0.1	0.7	4.1	0.0	0.0	0.0	0.0
306	8	30	0.0	0.1	0.3	1.5	0.0	1.0	1.8	5.7	0.0	0.0	0.0	0.0
306	10	41	0.0	0.1	0.3	1.5	0.0	1.0	1.6	4.3	0.0	0.0	0.0	0.0
306	11	46	0.0	0.0	0.1	1.0	0.0	0.2	0.9	4.3	0.0	0.0	0.0	0.0
306	12	89	0.0	0.1	0.3	1.5	0.0	0.9	1.7	5.2	0.0	0.5	4.6	43.0

Table 4-12 (revised September 2004)
Summary of Smear Sampling Results [1,2,3]
DU Buildings
NRC License Termination Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)		Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)			
			Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
306	13	42	0.0	0.2	0.5	2.7	0.0	0.5	1.3	4.8	0.0	0.0	0.0	0.0
2073	1	123	0.0	0.0	0.2	1.7	0.0	0.1	0.7	4.8	0.0	0.6	6.1	67.8
2073	2	25	0.0	0.3	0.5	1.7	0.0	0.4	1.2	3.8	0.0	0.0	0.0	0.0
2073	3	63	0.0	0.1	0.4	1.4	0.0	0.6	1.5	4.8	0.0	2.5	11.3	55.9
2084	2	34	0.0	0.3	0.5	1.7	0.0	0.4	1.1	3.8	0.0	0.0	0.0	0.0
2084	3	173	0.0	0.2	1.2	15.0	0.0	0.9	2.7	27.7	0.0	3.9	18.1	178.7
2084	6	15	0.0	0.12	0.5	1.8	0.0	1.2	2.5	6.5	0.0	0.0	0.0	0.0

Notes:

(1) 10 CFR 835, Appendix D, removable contamination limits: natural U, U-235, U-238, and assoc. decay products - 1,000 dpm/100cm^2; Tritium - 10,000 beta-gamma/100cm^2.

(2) Smear samples collected over a 100 cm^2 area.

(3) The reported detection limits ranged from 2-6 dpm for alpha measurements, 6-8 dpm for beta measurements, and 85-93 dpm for gamma measurements.

(4) dpm = disintegrations per minute.

Table 5-9 (revised September 2004)
Summary of Smear Sampling Results [1,2]
Building 612
Final Status Survey Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)		Number of Smears	Alpha (dpm)[3]				Beta (dpm)				Gamma (dpm)			
			Min	Average	St. Dev	Max	Min	Average	St. Dev	Max	Min	Average	St. Dev	Max
612	A	59	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	AA	142	0.0	0.0	0.1	0.8	0.0	0.0	0.3	3.6	0.0	0.0	0.0	0.0
612	B	22	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	BB	37	0.0	0.0	0.1	0.7	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	C	13	0.0	0.2	0.6	1.8	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	D	18	0.0	0.2	0.4	1.3	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	E	22	0.0	0.1	0.2	0.6	0.0	0.1	0.5	2.5	0.0	0.0	0.0	0.0
612	F	45	0.0	0.1	0.3	0.9	0.0	0.5	1.2	3.8	0.0	0.0	0.0	0.0
612	G	9	0.0	0.2	0.5	1.3	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	H	9	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	6.4	19.1	57.2
612	I	16	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	4.7	18.7	74.7
612	J	17	0.0	0.1	0.2	0.9	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	K	32	0.0	0.1	0.3	1.5	0.0	0.1	0.8	4.6	0.0	3.7	14.5	62.0
612	L	29	0.0	0.1	0.3	1.5	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	M	232	0.0	0.0	0.2	1.1	0.0	0.1	0.4	4.5	0.0	0.5	5.6	63.0
612	N	37	0.0	0.1	0.3	1.4	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	O	36	0.0	0.1	0.3	1	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	P	41	0.0	0.0	0.2	1.1	0.0	0.1	0.4	2.5	0.0	1.3	8.1	51.9
612	Q	41	0.0	0.1	0.3	1.5	0.0	0.4	1.0	3.8	0.0	0.0	0.0	0.0
612	R	37	0.0	0.1	0.2	1.2	0.0	0.2	0.8	4	0.0	0.0	0.0	0.0
612	S	35	0.0	0.1	0.3	1.5	0.0	0.3	0.8	2.9	0.0	0.0	0.0	0.0
612	T	36	0.0	0.1	0.4	1.2	0.0	0.3	0.9	3.5	0.0	0.0	0.0	0.0
612	U	95	0.0	0.1	0.3	1.4	0.0	0.2	0.7	3.7	0.0	0.0	0.0	0.0
612	V	118	0.0	0.0	0.2	1	0.0	0.1	0.5	4.1	0.0	0.0	0.0	0.0
612	W	103	0.0	0.0	0.2	1.1	0.0	0.2	0.7	3.3	0.0	0.0	0.0	0.0
612	X	107	0.0	0.1	0.3	1.1	0.0	0.0	0.3	3.2	0.0	0.7	6.9	71.5
612	Y	146	0.0	0.0	0.2	1	0.0	0.1	0.6	4.7	0.0	0.0	0.0	0.0
612	Z	93	0.0	0.1	0.3	1.3	0.0	0.0	0.4	4.1	0.0	0.0	0.0	0.0

Notes:

(1) 10 CFR 835, Appendix D, removable contamination limits: natural U, U-235, U-238, and assoc. decay products - 1,000 dpm/100cm^2; Tritium - 10,000 beta-gamma/100cm^2.

(2) Smear samples collected over a 100 cm^2 area.

(3) dpm = decays per minute.

UNITED STATES POSTAL SERVICE

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Your item was delivered at 1:31 pm on September 03, 2004 in KING OF PRUSSIA, PA 19406. The item was signed for by S WOLF.

Here is what happened earlier:

- ARRIVAL AT UNIT, September 03, 2004, 10:00 am, KING OF PRUSSIA, PA 19406
- ENROUTE, September 03, 2004, 9:55 am, SOUTHEASTERN, PA 19399
- ACCEPTANCE, September 02, 2004, 4:38 pm, ROMULUS, NY 14541

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Mr. James Kottan
U.S. Nuclear Regulatory Commission
Region 1
Division of Nuclear Materials Safety
Nuclear Materials Safety Branch 2
475 Allendale Road
King of Prussia, PA 19406-1415

Enroth, Thomas R NAN02

Jackie Travers
JC Kelly
John Hackett
Kurt Picel
Dave Eberhart / James Kotton

From: Travers, Jacqueline [Jacqueline.Travers@parsons.com]
Sent: Monday, October 17, 2005 1:14 PM
To: Enroth, Thomas R NAN02
Cc: Hackett, John
Subject: FW: NRC Discussion Items

Hi Tom,

This is what I spoke with John last week about discussing with NRC. You may pass this along to ANL. I was planning on speaking with John this afternoon. I will also pass along one other email from John, summarizing things on the Scenario A stats. If you would like to speak to us this afternoon, please give me a call at (508) 320-8708. I have also asked John to give you a call just to check in.

Thanks, Jackie
-----Original Message-----
From: Hackett, John
Sent: Thursday, October 13, 2005 7:07 PM
To: Travers, Jacqueline
Cc: Kadlubak, Kathleen
Subject: NRC Discussion Items

1. Use of Scenario A:
a Spreadsheets per MARSSIM Appendix I - submit electronic copies/hard copies/example/summary only?
b Units in cpm
c Minimum number of measurements in tests - example of 20 locations, but 3 floor monitor and 17 phoswich. Compare directly with DCGL rather than use WRS test?

2. Issues with previous requests for information? *(No need to go through each one unless they bring them up...)*

3. Use of gross surface activity DCGL for depleted uranium Σ U_{234} U_{235} U_{236} weighted $\bar{X}$ used

4. Building 612:
Using FIDLER efficiencies available from source checks done during that survey, the DCGL in units of cpm is ~300 cpm. When Scenario A tests are done, 10 survey units do not pass for gamma measurements, but they do for alpha and beta. Can we rely upon alpha/beta to demostrate those survey units pass? Fiddler - low energy gamma measurements


100 cm²

5. Timeframe

I think that's it. I should be available on my cell phone if I'm not in my office tomorrow, but I should probably be in my office by 10 my time.

Thanks,
John

John R. Hackett, P.E.
Parsons
1700 Broadway, Suite 900

0900 - 18 Oct 05 NRC conference call

1-800-320-4844 9305

Enroth, Thomas R NAN02

From: Travers, Jacqueline [Jacqueline.Travers@parsons.com]
Sent: Monday, October 17, 2005 1:20 PM
To: Enroth, Thomas R NAN02
Cc: Hackett, John
Subject: FW: SEDA NRC update
Attachments: E0302 Scen A.xls; 306R11 Scenario A.xls; 612D Scenario A.xls

Hi Tom,

This is the status of the Scenario A runs. Everything has been run. John explains that the runs support our original conclusions, except for the gamma data in 10 rooms in Bldg 612. John explained to me further that our alpha and beta data do support release for these rooms and I think he believes NRC is already aware of the issues with the low efficiency of the gamma data.

Hope this helps. As I mentioned in my last email - feel free to call me if you have any questions.

Thanks, Jackie
-----Original Message-----
From: Hackett, John
Sent: Friday, September 30, 2005 4:25 PM
To: Travers, Jacqueline
Cc: Kadlubak, Kathleen
Subject: SEDA NRC update

Jackie/Katie,

I've gotten through the WRS tests for all of the igloo and building survey units using Scenario A. I've attached a couple of examples, and will put the rest on the P-drive. I used the appropriate background plus the DCGL for that instrument in cpm (listed in Tables 3-2, 4-2, and 5-2 of the report). The gross activity DCGL for DU in units of dpm/100 cm2 was converted to a cpm value using the detector active area and the instrument efficiency from the function check data.

The only issues we have are with 10 rooms in Building 612. Since the efficiency from the function check data we have is so low (0.75%), the DCGL in cpm is very low (~300 cpm) for 612, which is what is causing the problem. Since we don't have an actual reference area data set for FIDLER measurements at 612 (no data from 2078, so I used both the "windowed" background from C0912 and the daily function check backgrounds), I'm thinking we approach it the same way we did in the initial report - compare the FIDLER data qualitatively to all available backgrounds. There's not really a whole lot we can do to fix this.

Going through the old report a little, there are some things we'll need to update to reflect the use of Scenario A, such as the example in Section 2. Also, since the NRC apparently isn't interested in what at the site contributes to above-background dose, I'm thinking we get rid of the dose contribution discussion at the end of each section (since we don't have "above-background" datasets anymore), and maybe do a worst-case dose assessment in the conclusions at the end. We'll also need to update and/or eliminate some tables. Based on all that, I think we'll need to submit a new report.

In the interest of heading off any other comments, do we have calibration certificates for the 2002 field instruments, or the 612 instruments? I don't think we had those to include with the original report.

I will be out next week, but should have evening email access. Let me know if you have any questions!

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

August 9, 2004

Docket No. 04008526 License No. SUC-1275
Control No. 135163

Stephen M. Absolom
Installation Manager
Caretaker Office
Seneca Army Depot Activity
5786 State Route 96
P.O. Box 9
Romulus, NY 14541-0009

SUBJECT: DEPARTMENT OF THE ARMY, REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR AMENDMENT TO LICENSE, CONTROL NO. 135163

Dear Mr. Absolom:

This is in reference to your letter dated June 15, 2004 requesting to amend Nuclear Regulatory Commission License No. SUC-1275. In order to continue our review, we need the following additional information.

1. Your compliance approach does not appear to follow that recommended in MARSSIM. The null hypothesis recommended for use in MARSSIM is: "the residual radioactivity in the survey unit exceeds the release criteria." This statement directly addresses the issue of compliance with the DCGL, and requires significant evidence that the residual radioactivity in the survey unit is less than the DCGL to reject the null hypothesis and pass the survey unit. Distinguishability from background is not addressed under this hypothesis. Additionally, Appendix 1A of your submittal, License Termination and License Release Plan (LTP), Table 5-4, footnote 6, states that the alpha value in Table 5-4 is the acceptable level of Type I decision error, when the null hypothesis is that survey unit exceeds the cleanup standard. This statement is consistent with the recommended null hypothesis in MARSSIM. Please discuss the statistical methods you used for determining compliance to the DCGLs relative to the null hypothesis recommended in MARSSIM and presented in Table 5-4 of your LTP. Also please provide the retrospective power curves.

2. MARSSIM recommends that when gross activity DCGLs are used, an appropriate weighted total efficiency should be used for the radiological surveys. Please provide the calculations for determining the weighted total efficiencies used for the radiological surveys. If weighted total efficiencies were not used, please provide the basis for not using weighted total efficiencies. In addition, MARSSIM states that the total efficiency for survey instruments may be considered to represent the product of two factors, the instrument efficiency and the source efficiency. Please provide the instrument efficiencies and source efficiencies used in the determination of the total efficiencies for the radiation survey instruments used to perform the radiological surveys. If

the total efficiencies, please provide the basis for not using these efficiencies for determining the total efficiency.

3. Please provide examples of the calculations for the MDAs presented in Tables 3-3, 4-3, 5-3, and 6-2.

4. Please provide the method used to determine the mean cpm in Tables 3-11 and 4-10. Also please provide the standard deviation for these mean values.

5. MARSSIM states that sample results should be reported along with their associated uncertainties. For smear sample results in Tables 3-13, 4-12, 5-9, and 6-5, please provide the uncertainties for the results and the standard deviation for the average results. Also, for the sample results in Tables 3-14 and 4-13, please define the reported uncertainties. For example, do they represent the counting uncertainty (at some confidence interval) or the total propagated uncertainty (at some confidence interval).

6. Section 5.3.3 of the report on page 5-3 states: "Per MARSSIM for Class 1 survey units, all direct and scanning measurements from each building were compared directly with the $DCGL_{EMC}$ for DU. A following sentence in Section 5.3.3 states: "Scanning measurements from Building 612 were not available to preform the $DCGL_{EMC}$ comparison. Table 5-3 indicates that the instrumentation used for the survey of Building 612 included a floor monitor. However, no scanning measurements are included in the data tables for section 5 of the report. Were scanning measurements made during the survey of Building 612? If so, please provide these measurements. Table 5-3 also reports an efficiency of 0.75% for the FIDDLER, resulting in a scanning MDA of 167,867 dpm/100cm^2 which is above $DCGL_W$ for DU. The FIDDLER efficiencies presented in Tables 3-3 and 4-3 are 15%. Please explain the difference in the FIDDLER efficiencies.

In accordance with 10 CFR 2.390, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html.

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control No. 135163. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5214.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we shall assume that you do not wish to pursue your application.

Sincerely,

Original signed by James Kottan

James Kottan
Senior Health Physicist
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety

Enclosure:
10 CFR Parts 19, 20, and 30

cc:
John Cleary, Radiation Safety Officer

U.S. Army Corps of Engineers, New York District
Seneca Office for Project Management
CENAN-PP-M
Building 125, Seneca Army Depot
5786 State Route 96, Romulus, NY 14541-5001

From: **Thomas R. Enroth** **Phone: 607-869-1255**
Fax: 607-869-1251

Number of Pages including Cover: 4
Date: 19Aug 04

TO: Jackie Travers / Katie Kadlubak / John Hackett

FAX #: 617/457-7979 / 216/486-6119 / 303/831-8208

COMMENTS:

The Depot received this letter today from the NRC. We have 30 calendar days to respond. (8 Sept!) Take a look at it and we will need to discuss the game plan next week. Note: My computer crashed so I have no e-mail now. It may be down until next wed so call me rather than email for now. I will not be in Friday this week

Tom

U.S. Army Corps of Engineers, New York District
Seneca Office for Project Management
CENAN-PP-M
Building 125, Seneca Army Depot
5786 State Route 96, Romulus, NY 14541-5001

From: **Thomas R. Enroth** **Phone: 607-869-1255**
Fax: 607-869-1251

Number of Pages including Cover: 4

Date: 19Aug 04

TO: Kent Picel

FAX #: 630-252-4336

COMMENTS:

Hello -

This is the NRC response to the LTP that was submitted. We received it today, it is dated 9Aug and it has a 30 day window to respond. Parsons will be working on the response, however, they may need to discuss some items with ANL in the next week or 2. NOTE: My computer crashed so I will be without email until next week some time. I will be in touch or call me if you have questions.

Thanks, Tom

① interoffice call 9/20/05 3:30p
1-800-320-4844 1234
Parrish, ANL, SEDA
② conference call 10/18/05 0900
NRC (J. Hoffman), Parrish, SEDA (TE

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

September 7, 2005

Docket No. 04008526 License No. SUC-1275
Control No. 135163

Stephen M. Absolom
Installation Manager
Caretaker Office
Seneca Army Depot Activity
5786 State Route 96
P.O. Box 9
Romulus, NY 14541-0009

SUBJECT: SENECA ARMY DEPOT ACTIVITY, REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR AMENDMENT TO LICENSE, CONTROL NO. 135163

Dear Mr. Absolom:

This is in reference to your letter dated February 28, 2005 providing additional information concerning your license termination request for Seneca Army Depot Activity (SEDA). We have completed our review of the additional information you have provided. This review was conducted by both NRC Region I staff and NRC Office of Nuclear Materials Safety and Safeguards staff. As a result of our review we have determined that the use of Scenario B to demonstrate compliance with the NRC criteria for the unrestricted release of SEDA is inappropriate.

NUREG-1757, Consolidated NMSS Decommissioning Guidance, Volume 2, *Characterization, Survey, and Determination of Radiological Criteria*, Section 2.4 states that:

> "... NRC staff's default assumption is that the use of Scenario A is appropriate. The use of Scenario B is expected only for a small number of facilities, and the considerations for any given facility are expected to be site specific. Therefore, NRC staff recommends that licensees contact NRC early in the licensee's FSS design process to discuss considerations for their situation."

In your *License Termination and License Release Plan*, which was transmitted by your letter dated February 11, 2003, you provided information indicating that Scenario A would be used to demonstrate compliance with the NRC criteria for unrestricted release. Our letter to you dated June 11, 2003 transmitted Amendment 13 of your license which incorporated by reference your *License Termination and License Release Plan* in condition 15 of the license. Therefore, based on Condition 15 of your license, you had committed to use Scenario A for the SEDA decommissioning.

When applying Scenario B to a site decommissioning, the key assumption is that the $DCGL_w$ is small when compared to measurement and/or background variability. For the SEDA decommissioning, however, it appears that your $DCGL_w$ values are large compared to

background/measurement variability which would allow the use of Scenario A. Additionally, we noted that you used Scenario B even though some reference areas failed the K-W test, reference areas were established based on different materials (although background from different materials is not expected to be similar), and reference areas were established based on an artificial separation of high and low measurements.

Since we have determined that the use of Scenario B is inappropriate for your facility, please provide us with your plans for license termination relative to the conditions of your license and the considerations of NUREG-1757, Volume 2.

We will continue our review of your license amendment application for license termination upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control No. 135163. If you have any technical questions regarding this letter, please call me at (610) 337-5214.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we will assume that you do not wish to pursue your license amendment application.

Sincerely,

James Kottan
Senior Health Physicist
Decommissioning Branch
Division of Nuclear Materials Safety

cc:
John Cleary, Radiation Safety Officer

Enroth, Thomas R NAN02

From: Travers, Jacqueline [Jacqueline.Travers@parsons.com]
Sent: Wednesday, September 28, 2005 12:00 PM
To: stephen.m.absolom@us.army.mil; Enroth, Thomas R NAN02; clearyj@seneca-hp.army.mil
Cc: Kadlubak, Kathleen; Hackett, John; Heino, Todd
Subject: NRC Chronology of Correspondence

Steve/Tom/John:

Below is a chronology of correspondence and a summary issue regarding the data comparison done for the License Termination. I'd be happy to review this on our call this afternoon and answer any questions you may have.

The following summarizes the correspondence with NRC regarding License Termination.

February 2003 – ANL's License Termination Plan submitted to NRC. LTP references MARSSIM but does not explicitly refer to which Scenario (A or B) would be used to compare the data. A footnote reference is made to the null hypothesis assuming the site exceeds the release criterion (Scenario A).

May 2004 – Parsons prepares NRC License Termination Report and receives comments from Army/USACE/ANL. No comments were received internally regarding the use of Scenario B versus Scenario A.

6/15/04 - Submitted License Termination Report to NRC.

8/09/04 - Initial comments were received from NRC. The first comment discusses that MARSSIM recommends using a null hypothesis that states the survey area is above the release criteria (referred to as Scenario A in MARSSIM) and we chose to use a null hypothesis stating the survey area is indistinguishable from background (referred to Scenario B in MARSSIM). NRC asked for additional justification and power curve data supporting the use of Scenario B.

9/02/04 - Response to NRC comments (attached): Parsons specified in response to comment 1 that we were using Scenario B due to the background variability and the fact that the primary ROCs (uranium isotopes) are present in background; we indicated that power curves can be made available upon request.

1/26/05 – Parsons informed by John Cleary that he spoke with Jim Kottan of NRC, and he requested the power curves in support of Scenario B.

1/27/05 – Parsons discussed the power curve method with Jim Kottan – who

indicated he agreed with the approach during call.

2/9/05 - Submit example power curve calculation to Kurt Picel of ANL.

2/23/05 - Receive email from Kurt Picel forwarded by Tom Enroth regarding response to NRC comments and power curves. The use of Scenario B is discussed and it was decided in discussions between Parsons/ANL/Army that the use of Scenario B, although not preferred, would be adequate since it appeared the survey units would pass using either method. No elevated areas of contamination were found. It was decided that it was best to continue on the current path and submit the power curves supporting the use of Scenario B that NRC requested.

3/11/05 - Received confirmation from NRC that they have received the CD submitted containing power curves and discussion.

9/07/05 - Most recent communication with NRC rejecting use of Scenario B.

The issue regarding the two scenarios for comparing survey data is outlined below:

MARSSIM considers two ways to compare site data to some critical value. For Scenario A, the comparison assumes that the survey unit contains residual radioactivity above the release criterion (this is the null hypothesis). For Scenario B, the null hypothesis is that the survey area is indistinguishable from background.

In most situations, MARSSIM states that Scenario A is more appropriate because it directly compares the data to the release criterion. By assuming the survey area is above the release criterion in the null hypothesis, (i.e. guilty until proven innocent), the consequence of making an error in the data comparison (e.g. by missing elevated areas in the measurements) is that a clean site gets remediated.

When the primary consideration is determining if residual radioactivity at the site is distinguishable from background, Scenario B may be used. This scenario assumes the survey data are not different than the background data (i.e. innocent until proven guilty). The consequence of making an error in the data comparison (e.g. missing elevated areas in the measurements) is that a contaminated site is assumed to be clean. This is riskier from a regulatory standpoint (and subsequently, as we see, more difficult to defend).

Parsons used Scenario B in conducting previous surveys at Seneca (e.g. SEAD-12). The basis for using Scenario B was that it was closer in line with how risk assessments were being conducted for chemicals of concern at the site. A comparison to background was done; if not distinguishable from background, the radionuclide or area of concern dropped out of consideration. The risk assessment then included areas or radionuclides distinguishable from (and above) background.

For the License Termination Report, Parsons decided to continue the use of Scenario B to maintain consistency with previous investigations. We believed, at the time, that this was within the scope of the LTP and was justifiable in light of the

background variability and the lack of any contamination in the licensed survey units. NRC does not agree.

Path forward: Re-run data using Scenario A. Should be complete (first summary draft) by Friday (Sept 30). If ok - prepare to submit to NRC.

Please let me know if you have any questions.

Thanks,

Jackie

Jacqueline Travers
Project Manager

Parsons

150 Federal St., 4th floor
Boston, MA 02110

617-449-1566 (did)
617-946-9777 (fax)
jacqueline.travers@parsons.com
SAFETY - MAKE IT PERSONAL

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@anl.gov]
Sent: Tuesday, February 22, 2005 6:17 PM
To: Enroth, Thomas R NAN02
Cc: Sydelko, Thomas G.
Subject: Bld 306, Room 10

Hi tom,

I have reviewed the materials submitted by Parsons regarding the subject survey unit against the cited reference document, NUREG 1505. The calculations performed for the WRS test, K-W test, and power curves appear to be correct as far as I can tell, assuming the spreadsheets used were set up correctly. I have just a couple of comments on the overall process. First, Parsons has chosen to use Scenario B for the posing of the null hypothesis, that is, the survey unit is assumed to pass and the data collected must show that it fails. (Scenario A is the reverse, the SU is assumed to be contaminated and data must show that it passes.) Chapter 2 of NUREG 1505 notes that Scenario B should be chosen when the DCGL is close to background and it would be hard to demonstrate with data that residual contamination was below the DCGL. In the present case, however, the DCGLs are far above background levels and Scenario A would normally be chosen. NRC might note this also, but it's merely a technicality, because the survey unit would apparently pass easily either way.

I seem to recall that I made a similar comment on an earlier data set and Parson's response was that they chose Scenario B to be consistent with earlier survey results analysis.

My second comment is related to the first. Parson's has chosen to perform the Krustal-Wallace test from Chapter 13 of NUREG 1505 to demonstrate that residual levels, in most cases, are indistinguishable from background. As noted in the introductory paragraph of this chapter, this analysis is also performed when DCGLs are near background levels, again because it is hard to prove with measurements in such cases that residuals are below DCGLs. Again, this test is not necessary when DCGLs are well above background as they are in the present case. The test might have been performed to be consistent with earlier analyses or just to establish the fact that certain areas are not impacted or are barely impacted.

Please let me know if you have any questions. I'll look at the ALARA materials for SEAD-48 in the next few days.

Regards,

Kurt

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@anl.gov]
Sent: Tuesday, February 22, 2005 6:17 PM
To: Enroth, Thomas R NAN02
Cc: Sydelko, Thomas G.
Subject: Bld 306, Room 10

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I have reviewed the materials submitted by Parsons regarding the subject survey unit against the cited reference document, NUREG 1505. The calculations performed for the WRS test, K-W test, and power curves appear to be correct as far as I can tell, assuming the spreadsheets used were set up correctly. I have just a couple of comments on the overall process. First, Parsons has chosen to use Scenario B for the posing of the null hypothesis, that is, the survey unit is assumed to pass and the data collected must show that it fails. (Scenario A is the reverse, the SU is assumed to be contaminated and data must show that it passes.) Chapter 2 of NUREG 1505 notes that Scenario B should be chosen when the DCGL is close to background and it would be hard to demonstrate with data that residual contamination was below the DCGL. In the present case, however, the DCGLs are far above background levels and Scenario A would normally be chosen. NRC might note this also, but it's merely a technicality, because the survey unit would apparently pass easily either way.

I seem to recall that I made a similar comment on an earlier data set and Parson's response was that they chose Scenario B to be consistent with earlier survey results analysis.

My second comment is related to the first. Parson's has chosen to perform the Krustal-Wallace test from Chapter 13 of NUREG 1505 to demonstrate that residual levels, in most cases, are indistinguishable from background. As noted in the introductory paragraph of this chapter, this analysis is also performed when DCGLs are near background levels, again because it is hard to prove with measurements in such cases that residuals are below DCGLs. Again, this test is not necessary when DCGLs are well above background as they are in the present case. The test might have been performed to be consistent with earlier analyses or just to establish the fact that certain areas are not impacted or are barely impacted.

Please let me know if you have any questions. I'll look at the ALARA materials for SEAD-48 in the next few days.

Regards,

Kurt

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

June 11, 2003

Docket No. 04008526 License No. SUC-1275
Control No. 132746

Stephen M. Absolom
Commander's Representative
Department of the Army
Seneca Army Depot Activity
5786 State Route 96
P. O. Box 9
Romulus, NY 14541-009

SUBJECT: DEPARTMENT OF THE ARMY, ISSUANCE OF LICENSE AMENDMENT, CONTROL NO. 132746

Dear Mr. Absolom:

This refers to your license amendment request. Enclosed with this letter is the Amendment 13 of the license.

Please note that Condition 14 of Amendment 12 of this license was removed. That condition was added to Amendment 10 of the license, after you notified us of the planned closure of the facility in August 1996. Because you did not begin decommissioning immediately at that time, you were required to submit a decommissioning plan within 12 months of the notification. Amendments 11 and 12 extended the date for submission of the plan. A plan was submitted by the date as required and the condition is no longer applicable. Several revisions of the plan have been reviewed because of the site-specific derived concentration guideline levels (DCGL) used as criteria for release. The approved criteria is listed in Condition 14 of Amendment 13 (enclosed).

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5239, so that we can provide appropriate corrections and answers.

An environmental assessment for this action is not required, since this action is categorically excluded under 10 CFR 51.22(c)(14).

In accordance with 10 CFR 2.790, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html.

Thank you for your cooperation.

Sincerely,

Original signed by Elizabeth Ullrich

Betsy Ullrich
Senior Health Physicist
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety

Enclosure:
Amendment No. 13

cc:
John F. Cleary, Radiation Safety Officer

NRC FORM 374 U.S. NUCLEAR REGULATORY COMMISSION PAGE 1 OF 3 PAGES

Amendment No. 13

Duplicate

MATERIALS LICENSE

Duplicate

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	In accordance with the letter dated February 11, 2003,
1. Department of the Army Commander, Seneca Army Depot Activity ATTN: SDSSE-CO 2. Romulus, New York 14541-5001	3. License number SUC-1275 is amended in its entirety to read as follows: 4. Expiration date February 28, 2005 5. Docket No. 040-08526 Reference No.

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Uranium (depleted in the isotope uranium 235)	A. Solid metal alloy	A. 5,000,000 kilograms
B. Uranium (depleted in the isotope uranium 235)	B. Solid metal alloy	B. 5,000,000 kilograms

9. Authorized use:

A. For receipt, possession, storage, transportation, inspection and disposal incident to the demilitarization of munitions.

B. For receipt, possession, storage, transportation, inspection, and disposal incident to demilitarization of munitions from other licensed U.S. Army and U.S. Navy installations.

CONDITIONS

10. Licensed material may be used only at the licensee's facilities located at the Seneca Army Depot, Romulus, New York.

11. A. Licensed material shall be used by, or under the supervision of John F. Cleary, Michael R. Lewis, or Thomas E. Reynolds.

B. The Radiation Safety Officer for this license is John Cleary.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
SUC-1275

Docket or Reference Number
040-08526

Amendment No. 13

12. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

13. Radioactive waste generated shall be stored in accordance with the statements, representations, and procedures included with the waste storage plan described in the licensee's letter dated January 27, 1995.

14. The licensee may use the Derived Concentration Guideline Level (DCGL) values described in the Seneca Army Depot Activity License Termination and License Release Plan for decommissioning of the facilities at the Seneca Army Depot Activity, Romulus, New York, with the intention of release of the facilities for unrestricted use.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
SUC-1275

Docket or Reference Number
040-08526

Amendment No. 13

15. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below, except for minor changes in the medical use radiation safety procedures as provided in 10 CFR 35.31. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Letter dated January 17, 1992
B. Letter dated March 31, 1992
C. Application dated October 30, 1992
D. Letter dated November 2, 1992
E. Letter dated December 21, 1992
F. Letter dated September 2, 1993
G. Letter dated September 27, 1993
H. Letter dated December 15, 1993
I. Letter dated January 27, 1995
J. Letter dated December 5, 1996
K. Letter dated August 13, 1997
L. Letter dated February 11, 2003 with the Seneca Army Depot Activity License Termination and License Release Plan
M. Letter dated April 3, 2003

For the U.S. Nuclear Regulatory Commission

Date June 11, 2003

By ***Original signed by Elizabeth Ullrich***

Elizabeth Ullrich
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

June 11, 2003

Docket No. 04008526 License No. SUC-1275
Control No. 132746

Stephen M. Absolom
Commander's Representative
Department of the Army
Seneca Army Depot Activity
5786 State Route 96
P. O. Box 9
Romulus, NY 14541-009

SUBJECT: DEPARTMENT OF THE ARMY, ISSUANCE OF LICENSE AMENDMENT, CONTROL NO. 132746

Dear Mr. Absolom:

This refers to your license amendment request. Enclosed with this letter is the Amendment 13 of the license.

Please note that Condition 14 of Amendment 12 of this license was removed. That condition was added to Amendment 10 of the license, after you notified us of the planned closure of the facility in August 1996. Because you did not begin decommissioning immediately at that time, you were required to submit a decommissioning plan within 12 months of the notification. Amendments 11 and 12 extended the date for submission of the plan. A plan was submitted by the date as required and the condition is no longer applicable. Several revisions of the plan have been reviewed because of the site-specific derived concentration guideline levels (DCGL) used as criteria for release. The approved criteria is listed in Condition 14 of Amendment 13 (enclosed).

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5239, so that we can provide appropriate corrections and answers.

An environmental assessment for this action is not required, since this action is categorically excluded under 10 CFR 51.22(c)(14).

In accordance with 10 CFR 2.790, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html.

Thank you for your cooperation.

Sincerely,

Original signed by Elizabeth Ullrich

Betsy Ullrich
Senior Health Physicist
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety

Enclosure:
Amendment No. 13

cc:
John F. Cleary, Radiation Safety Officer

NRC FORM 374 U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 13

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	In accordance with the letter dated February 11, 2003,
1. Department of the Army Commander, Seneca Army Depot Activity ATTN: SDSSE-CO 2. Romulus, New York 14541-5001	3. License number SUC-1275 is amended in its entirety to read as follows: 4. Expiration date February 28, 2005 5. Docket No. 040-08526 Reference No.

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Uranium (depleted in the isotope uranium 235)	A. Solid metal alloy	A. 5,000,000 kilograms
B. Uranium (depleted in the isotope uranium 235)	B. Solid metal alloy	B. 5,000,000 kilograms

9. Authorized use:

A. For receipt, possession, storage, transportation, inspection and disposal incident to the demilitarization of munitions.

B. For receipt, possession, storage, transportation, inspection, and disposal incident to demilitarization of munitions from other licensed U.S. Army and U.S. Navy installations.

CONDITIONS

10. Licensed material may be used only at the licensee's facilities located at the Seneca Army Depot, Romulus, New York.

11. A. Licensed material shall be used by, or under the supervision of John F. Cleary, Michael R. Lewis, or Thomas E. Reynolds.

B. The Radiation Safety Officer for this license is John Cleary.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
SUC-1275

Docket or Reference Number
040-08526

Amendment No. 13

12. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

13. Radioactive waste generated shall be stored in accordance with the statements, representations, and procedures included with the waste storage plan described in the licensee's letter dated January 27, 1995.

14. The licensee may use the Derived Concentration Guideline Level (DCGL) values described in the Seneca Army Depot Activity License Termination and License Release Plan for decommissioning of the facilities at the Seneca Army Depot Activity, Romulus, New York, with the intention of release of the facilities for unrestricted use.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
SUC-1275

Docket or Reference Number
040-08526

Amendment No. 13

15. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below, except for minor changes in the medical use radiation safety procedures as provided in 10 CFR 35.31. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Letter dated January 17, 1992
B. Letter dated March 31, 1992
C. Application dated October 30, 1992
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K. Letter dated August 13, 1997
L. Letter dated February 11, 2003 with the Seneca Army Depot Activity License Termination and License Release Plan
M. Letter dated April 3, 2003

For the U.S. Nuclear Regulatory Commission

Date June 11, 2003

By ***Original signed by Elizabeth Ullrich***

Elizabeth Ullrich
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

S: NLT 30 days = 12 Apr 03

March 13, 2003

Docket No. 04008526 License No. SUC-1275
Control No. 132746

Stephen M. Absolom
Commander's Representative
Department of the Army
Seneca Army Depot Activity
5786 State Route 96
P. O. Box 9
Romulus, NY 14541-0009

SUBJECT: DEPARTMENT OF THE ARMY, REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR AMENDMENT TO LICENSE, CONTROL NO. 132746

Dear Mr. Absolom:

This is in reference to your letter dated February 11, 2003 requesting to amend Nuclear Regulatory Commission License No. SUC-1275. In order to continue our review, we need the following additional information regarding the "Seneca Army Depot Activity License Termination and License Release Plan" (the Plan):

1. Section 2.2.1 and other sections of the Plan refers to "present standards" for remediation, but does not specify to which standards you refer. If you are referring to the license termination criteria of 25 millirem in a year to a member of the critical population, no further response if required. If you are referring to other standards, please describe them.

NYS 10 mrem/yr

2. Section 5.4.2 of the Plan states that Building 612, although classified as a Class 1 area, contains survey units greater than the maximum area recommended. Section 5.5.1.1 further states that Building 612 has already been surveyed in its entirety as a Class 1 survey area. Table 5-2 shows that Building 612 was divided into 28 survey units, ranging in size from 3 square meters (m^2) to 250 m^2. However, MARSSIM states that the maximum survey unit size for a Class 1 survey area is 100 m^2. If Building 612 is appropriately classified as a Class 1 survey area, then survey units and the types of surveys performed must meet the requirements for a Class 1 survey area. Confirm that survey units of appropriate size will be used, and all other criteria for a Class 1 survey area will implemented for Building 612. Alternately, Building 612 may be re-classified if appropriate. Please note, if you intend to perform additional surveys in Building 612, that "double sampling" (taking a second set of samples in a one-stage survey) typically causes the Type I error rate to exceed the rate specified for the one-stage survey, and is usually not permitted. For additional information about double sampling, see MARSSIM guidance at http://www.epa.gov/radiation/marssim/faqsforusers.htm#faq4_1 .

3. Section 5.4.2 states that "121 storage bunkers will each be surveyed as a single Class 3 survey unit." Table 5-2 shows that the 121 storage bunkers are considered 121 survey units, all Class 3 survey areas. We understand this to mean that each bunker is considered a Class 3 survey area, and that each bunker will be surveyed as an individual survey unit. If our understanding is incorrect, please inform us in writing.

4. Section 5.4.2 states that you expect contamination only on floor surfaces, and that direct measurements at specific locations will not be performed of walls and ceilings. For buildings which you have initially classified as Class 1 or Class 2 survey areas, direct measurements are required for all surfaces. However, you may treat floors and/or walls and/or ceilings as separate survey units, which may have different survey area classifications, if that is appropriate. For example, in some facilities, it is appropriate to classify floors as a Class 1 survey area, lower walls as a Class 2 survey area, and upper walls and ceilings as a Class 3 survey area. Please revise your survey procedure to include all required surveys for Class 1 and Class 2 areas. Alternately, please review the classification of the facilities and provide updated classifications as appropriate.

5. Section 5.5 states that soil measurements will be made outside of buildings. Such areas should also be discussed in Section 5.4 and classified as to the type of survey area, or as non-impacted.

6. The information provided in Section 5.5 is sufficient as an example of your planned surveys. However, changes may be required prior to implementation of the final status survey plan:

   a. When site-specific derived concentration guideline levels (DCGL) are approved, several of the necessary survey parameters may need to be re-calculated, especially if the approved DCGLs are different from the proposed DCGLs. Such parameters may include the number of survey points in each survey unit, the necessary scan MDA and static MDA, and other related information. Confirm that the survey parameters will be reviewed and revised if necessary, when the DCGLs are approved.

   b. Information such as that specified in Table 5-4, may be required to change as site-specific information is available. Therefore, this review does not consider the numbers shown in Table 5-4 as "acceptable" or "final." For example, Table 5-4 does not incorporate any information from previous surveys, such as the results shown in Table 5-3, to estimate the standard deviation of the results of samples in the survey unit. Such information is usually determined from characterization and/or remediation surveys. Instead, the Plan used a recommended value of 0.3 for the coefficient of variance and assumed that the LBGR is the mean value of the results of surveys for an area. Confirm that the LBGR and the standard deviation will be evaluated for the various areas when actual surveys are performed, and a determination made if the estimated number of samples

collected was sufficient in each area. Please note that, if the number of samples collected was not sufficient, final status surveys may be required to be repeated.

7. The proposed DCGLs, and the information you provided as the bases of the proposed DCGLs, are under review. We will inform you of the results of that review when it is completed.

In accordance with 10 CFR 2.790, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html.

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control No. 132746. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5040.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we shall assume that you do not wish to pursue your application.

Sincerely,

Betsy Ullrich

Betsy Ullrich
Senior Health Physicist
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety

Enclosure:
10 CFR Parts 19, 20, and 30

cc:
John F. Cleary, Radiation Safety Officer

DEPARTMENT OF THE ARMY
SENECA army DEPOT ACTIVITY
5786 STATE RTE 96, P.O. BOX 9
ROMULUS, NEW YORK 14541-0009

April 3, 2003

REPLY TO ATTENTION OF
BRAC Field Office

Ms. Elizabeth Ullrich
United States Nuclear Regulatory Commission
Region 1
Division of Nuclear Materials Safety
Nuclear Materials Safety Branch 2
475 Allendale Road
King of Prussia, PA 19406-1415

Mail Control No. 132746

Dear Ms. Ullrich,

Thank you for the NRC's quick response to our request for concurrence to our license termination plan for NRC license SUC-1275. In response to your questions in your March 13, 2003 letter the following clarification is provided:

1. The comment concerning Section 2.2.1 referring to "present day standards", refers to the prevailing dose criterion, either the NRC's 25 mrem/yr standard, or New York State's 10 mrem.yr standard. Since none of the license termination areas were former release sites, the question of what standard would apply never arose.

2. The comment concerning Section 5.4.2 refers to the survey unit sizes for building 612. Based on a review of the raw data collected we now propose reclassifying building 612 from Class 1 to Class 2. All references in the Plan will be changed to reflect this reclassification.

3. In regards to your comment on storage bunkers, it is our intent that each storage bunker be surveyed as a separate Class 3 survey unit.

4. This comment addresses text in Sec 5.4.2 of the Plan that states that contamination, if present, is expected to be confined to floors for all buildings, and further states that walls and ceilings in all buildings will receive only biased scanning surveys. The comment correctly points out that for rooms classified as Class 1 and Class 2 require direct samples to be collected from all surfaces including walls and perhaps ceilings. Affected buildings include 612 (previous Class 1), and buildings 5, 306, 2073, and S-2084, portions of which include a total of 21 Class 2 survey units. However, while the Plan did not explicitly call for such samples, systematic direct measurements on walls and ceilings were taken in the actual surveys conducted of these survey units. This sampling will be reviewed for sufficiency for supporting the pre-designated survey unit classification. If

insufficient sampling was conducted, additional sampling will be done in the affected surfaces. The Plan will be revised to reflect the requirement for the collection of such measurements in Class 1 and 2 survey units.

5. The comment asks that Sec 5.4 address the classification of soil survey areas outside of buildings. Sec 5.5.1.2 indicates that all storage bunkers "and surrounding grounds" will be surveyed as Class 3 areas. Sec 5.4 currently does not address outdoor survey units or their classification. During the surveys that were conducted of the storage bunkers and other buildings, no evidence of contamination was apparent. On this basis, it was concluded that contamination of surrounding grounds was highly unlikely. Therefore, no soil areas were surveyed or direct measurements taken. It is proposed that outdoor areas be classified as un-impacted under MARSSIM. Sec 5.4 will be revised to reflect this classification of outdoor areas.

6.a. The comment indicates that some survey parameters might change, e.g., the required number of direct measurements in a survey unit, if final DCGLs are different from those in the Plan. It appears that such changes are unlikely, as the Plan over-specified by about 50% the number of samples required as compared to what MARSSIM calculations indicated. Further, the revised DCGLs are, for the most part, somewhat higher than the original values and would require fewer samples than indicated in the Plan. In any case, the sufficiency of sampling will be reviewed upon final approval of DCGLs.

6.b. This comment, in reference to Table 5-4, raises the issue of data quality assessment (DQA). DQA requires reviewing the sufficiency of the data collected after the fact when the actual coefficient of variance (CV) of measurements is known. The Plan assumed an initial CV of 30% as suggested in MARSSIM. While the sample numbers specified are expected to prove to be sufficient, data quality assessment will be performed to verify the CV assumption and the sufficiency of sample numbers using the results of the collected data.

The plan will be revised to incorporate these changes and any additional changes on the proposed DCGLs, when they become available. We look forward to working with the NRC on this issue of great importance to the United States Army.

Sincerely,

Stephen M. Absolom

Stephen M. Absolom
Commander's Representative

Draft Responses to March 13, 2003 NRC Comments on the February 2003 License Termination Plan (the Plan) for Seneca Depot

Response to Comment 1:
The comment refers to the statement in Sec 2.2.1 that past release sites that were not remediated to "present day standards" would be classified as Class 1 or Class 2 areas under MARSSIM. The intent of this text was, as suggested in the comment, to refer to the prevailing dose criterion, whether it is NRC's 25 mrem/yr standard, or the State's 10 mrem/yr standard. However, none of the license termination areas were former release sites, so the question of what standard would apply never arose. The statement in the LTP was expressing a generic approach that would have been used if such areas were encountered.

Response to Comment 2:
Sec 5.4.2 of the Plan notes that in the previous Class 1 survey of Building 612 a few of the survey units were as large as 250 m2 and exceeded the suggested maximum size of 100 m2 in MARSSIM. The Plan further indicates that upon review of the survey data in 612 (and in these survey units in particular) if "residual contamination levels are found to be well below action levels, such survey units may be found to be of acceptable size to support release decisions." One option in such cases would be to propose reclassifying all or the affected parts of Building 612 to Class 2 or 3, which would allow the bigger survey units (up to 1000 m2 for Class 2). A second option might be to divide the oversized survey units into smaller units and evaluate the use of existing data for comparison to release criteria. In the original survey of Building 612, systematic samples were collected on floors, walls, and ceilings over a standard sized grid, so sample numbers were proportional to survey unit size. Even in the smallest survey units, however, the number of samples collected, on the order of 10, exceeded the required number determined in the current Plan. A cursory review of swipe sample and gamma survey results for the building suggests that little if any residual activity is present. Given the high density of sampling already completed (up to 200 samples in the larger units) and the expected absence of significant residual contamination, it is not expected that further sampling will be required. The leading option for addressing the survey unit size issue currently is to propose reclassification of all of Building 612 to Class 2 or Class 3. However, if further review of the survey data suggests that Class 1 is an appropriate classification, an examination of the sufficiency of the existing data set under such a classification will be evaluated.

Response to Comment 3:
The comment seeks clarification as to whether each storage bunker would be surveyed individually as a Class 3 survey unit. In accordance with the intent of the LTP each individual storage bunker was surveyed as a Class 3 survey unit.

Response to Comment 4:
This comment addresses text in Sec 5.4.2 of the Plan that states that contamination, if present, is expected to be confined to floors for all buildings, and further states that walls and ceilings in all buildings will receive only biased scanning surveys. The comment correctly points out that rooms classified as Class 1 and Class 2 require direct samples to be collected from all surfaces including walls and perhaps ceilings. Reduced sampling on walls and ceilings can only be justified if these surfaces are separately classified as Class 2 or 3, respectively. Affected buildings include 612 (all Class 1), and buildings 5, 306, 2073, and S-2084, portions of which include a total of 21 Class 2 survey units. However, while the Plan did not explicitly call for such samples, systematic direct measurements on walls and ceilings were taken in the actual surveys conducted of these survey units. This sampling will be reviewed for sufficiency for supporting the pre-designated survey unit classification. If insufficient sampling was conducted, data will be evaluated for possible reclassification of the affected surfaces. The Plan will be revised to reflect the requirement for the collection of such measurements in Class 1 and 2 survey units and/or the possible re-classification of walls and ceilings as justified by data and process knowledge.

Response to Comment 5:
The comment asks that Sec 5.4 address the classification of soil survey areas outside of buildings. Sec 5.5.1.2 indicates that all storage bunkers "and surrounding grounds" will be surveyed as Class 3 areas. Sec 5.4 currently does not address outdoor survey units or their classification. During the surveys that were conducted of the storage bunkers and other buildings, no evidence of contamination was apparent. On this basis, it was concluded that contamination of surrounding grounds was highly unlikely. Therefore, no soil areas were surveyed or direct measurements taken. It will be proposed that outdoor areas be classified as un-impacted under MARSSIM. Sec 5.4 will be revised to reflect this classification of outdoor areas. Also, Sec 5.6.3.2 currently indicates that land areas will be initially investigated using in situ gamma measurements. This section will be revised to indicate that such outdoor gamma investigations would be conducted only if contamination was found inside associated buildings.

Response to Comment 6a:
The comment indicates that some survey parameters might change, e.g., the required number of direct measurements in a survey unit, if final DCGLs are different from those in the Plan. It appears that such changes are unlikely, as the Plan over-specified by about 50% the number of samples required as compared to what MARSSIM calculations indicated. Further, the revised DCGLs are, for the most part, somewhat higher than the original values and would require fewer samples than indicated in the Plan. In any case, the sufficiency of sampling will be reviewed upon final approval of DCGLs.

Response to Comment 6b:
This comment raises the issue of data quality assessment (DQA). DQA requires reviewing the sufficiency of the data collected after the fact when the actual coefficient of variance (CV) of measurements is known. The Plan assumed an initial CV of 30% as suggested in MARSSIM. While the sample numbers specified are expected to prove to be sufficient, DQA will be performed to verify the CV assumption and the sufficiency of sample numbers using the results of the collected data.

Table 7-1
SEAD-12 Buildings
License Termination Report
Seneca Army Depot Activity

Building	Classification [1]	Survey Phase [2]	Building Use [3]
Building 800	3	II	Was a security check-point building for access into SEAD-12 via the north- northwest section of SEDA.
Building 802	3	II	Was used as an administrative office.
Building 803	1	I	Was used for the storage of removable nuclear capsules between 1957 and 1962. After the mid-1980's was used as a holding area for containerized radioactive wastes.
Building 804	1	I	Was used as a maintenance building for removable nuclear capsules between 1957 and 1962. Maintenance activities involved disassembling og nucear cpasules for routine maintenance and cleaning, and for the verification of the integrety of the fissile materials. After the mid-1980's was occupied by the WSA Security Systems Maintenance Division.
Building 805	1	I	Was used as a storeroom between 1957 and 1962.
Building 806	2,3	II	Was used as a training center for radiological assistance team personnel. Room 1 was used as a calibrations laboratory to calibrate and function check radiation scanning instruments with sealed radioactive sources.
Building 807	3	II	Was used as a supply support shop.
Building 809	3	II	Was used for flammable storage.
Building 810	2,3	I, II	Was used as a transfer area for military items that entered and exited the WSA between 1957 and demilitarization in 1997. Only the receiving room (Room 810-1) would have had sealed military items present that could have contained radioactivie materials within them.
Building 812	2,3	I, II	Was used as the command structure for all security operations within the former WSA. Room 32 was used to store military equipment containing sealed radioactive sources as integral components.
Building 813	3	II	Was used as a storage workshop.
Building 814	3	II	Was used as a spray painting facility for painting vehicles.
Building 815	1,2,3	I, II	Until 1962, was used for inspection and testing of non-nuclear mechanical and electrical systems. Following 1992, was used to de-milaritize non-nuclear components as part of the nuclear stockpile reduction effort.
Building 816	1,2,3	I, II	Until 1962, was used for inspection and testing of non-nuclear mechanical and electrical systems. Following 1992, was used to de-milaritize non-nuclear components as part of the nuclear stockpile reduction effort.
Building 817	3	II	Was used as a utility building.

Table 7-1
SEAD-12 Buildings
License Termination Report
Seneca Army Depot Activity

Building	Classification [1]	Survey Phase [2]	Building Use [3]
Building 819	1,2	I	Was used as a quality assurance inspection laboratory and was used by Sandia National Laboratories under contract to the AEC between 1957 to 1962.
Building 823	3	II	Was used as a general purpose magazine depot.
Building 824	3	II	Was used as a railway loading platform.
Building 825	3	II	Was used as a non-hazardous warehouse.
Building 827	3	II	Is currently an electrical utility shed.

Notes:
(1) Classifications are based on historical site assessment, per MARSSIM. Depending on the uses of the building, more than one survey unit classification may have been assigned.
(2) Phase 1 interior survey occurred in 1999. Phase II interior survey occurred in 2001.
(3) Building uses are summarized from the SEAD-12 Radiological Survey Report (Parsons, 2003).

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

June 11, 2003

Docket No. 04008526 License No. SUC-1275
Control No. 132746

Stephen M. Absolom
Commander's Representative
Department of the Army
Seneca Army Depot Activity
5786 State Route 96
P. O. Box 9
Romulus, NY 14541-009

SUBJECT: DEPARTMENT OF THE ARMY, ISSUANCE OF LICENSE AMENDMENT, CONTROL NO. 132746

Dear Mr. Absolom:

This refers to your license amendment request. Enclosed with this letter is the Amendment 13 of the license.

Please note that Condition 14 of Amendment 12 of this license was removed. That condition was added to Amendment 10 of the license, after you notified us of the planned closure of the facility in August 1996. Because you did not begin decommissioning immediately at that time, you were required to submit a decommissioning plan within 12 months of the notification. Amendments 11 and 12 extended the date for submission of the plan. A plan was submitted by the date as required and the condition is no longer applicable. Several revisions of the plan have been reviewed because of the site-specific derived concentration guideline levels (DCGL) used as criteria for release. The approved criteria is listed in Condition 14 of Amendment 13 (enclosed).

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5239, so that we can provide appropriate corrections and answers.

An environmental assessment for this action is not required, since this action is categorically excluded under 10 CFR 51.22(c)(14).

In accordance with 10 CFR 2.790, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html.

Thank you for your cooperation.

Sincerely,

Original signed by Elizabeth Ullrich

Betsy Ullrich
Senior Health Physicist
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety

Enclosure:
Amendment No. 13

cc:
John F. Cleary, Radiation Safety Officer

NRC FORM 374 U.S. NUCLEAR REGULATORY COMMISSION PAGE 1 OF 3 PAGES

Amendment No. 13

Duplicate

MATERIALS LICENSE

Duplicate

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	In accordance with the letter dated February 11, 2003,
1. Department of the Army Commander, Seneca Army Depot Activity ATTN: SDSSE-CO 2. Romulus, New York 14541-5001	3. License number SUC-1275 is amended in its entirety to read as follows: 4. Expiration date February 28, 2005 5. Docket No. 040-08526 Reference No.

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Uranium (depleted in the isotope uranium 235)	A. Solid metal alloy	A. 5,000,000 kilograms
B. Uranium (depleted in the isotope uranium 235)	B. Solid metal alloy	B. 5,000,000 kilograms

9. Authorized use:

A. For receipt, possession, storage, transportation, inspection and disposal incident to the demilitarization of munitions.

B. For receipt, possession, storage, transportation, inspection, and disposal incident to demilitarization of munitions from other licensed U.S. Army and U.S. Navy installations.

CONDITIONS

10. Licensed material may be used only at the licensee's facilities located at the Seneca Army Depot, Romulus, New York.

11. A. Licensed material shall be used by, or under the supervision of John F. Cleary, Michael R. Lewis, or Thomas E. Reynolds.

B. The Radiation Safety Officer for this license is John Cleary.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
SUC-1275

Docket or Reference Number
040-08526

Amendment No. 13

12. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

13. Radioactive waste generated shall be stored in accordance with the statements, representations, and procedures included with the waste storage plan described in the licensee's letter dated January 27, 1995.

14. The licensee may use the Derived Concentration Guideline Level (DCGL) values described in the Seneca Army Depot Activity License Termination and License Release Plan for decommissioning of the facilities at the Seneca Army Depot Activity, Romulus, New York, with the intention of release of the facilities for unrestricted use.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
SUC-1275

Docket or Reference Number
040-08526

Amendment No. 13

15. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below, except for minor changes in the medical use radiation safety procedures as provided in 10 CFR 35.31. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Letter dated January 17, 1992
B. Letter dated March 31, 1992
C. Application dated October 30, 1992
D. Letter dated November 2, 1992
E. Letter dated December 21, 1992
F. Letter dated September 2, 1993
G. Letter dated September 27, 1993
H. Letter dated December 15, 1993
I. Letter dated January 27, 1995
J. Letter dated December 5, 1996
K. Letter dated August 13, 1997
L. Letter dated February 11, 2003 with the Seneca Army Depot Activity License Termination and License Release Plan
M. Letter dated April 3, 2003

For the U.S. Nuclear Regulatory Commission

Date June 11, 2003

By ***Original signed by Elizabeth Ullrich***

Elizabeth Ullrich
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406

PARSONS

100 Summer Street • Boston, Massachusetts 02110 • (617) 457-7900 • Fax: (617) 457-7979 • www.parsons.com

May 29, 2003

Mr. Julio Vazquez
USEPA Region II
Superfund Federal Facilities Section
290 Broadway, 18th Floor
New York, NY 10007-1866

Mr. George Momberger
New York State Department of Environmental Conservation (NYSDEC)
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
625 Broadway, 11th Floor
Albany, NY 12233-7015

SUBJECT: **NRC License Termination Sites, Seneca Army Depot Activity, Romulus, New York**

Dear Mr. Vazquez/Mr. Momberger:

As you are aware, Parsons has completed the fieldwork for the Final Status Survey (FSS) at the Nuclear Regulatory Commission (NRC) License Termination Sites at Seneca Army Depot Activity (SEDA), Romulus, New York. The survey consisted of the radiological surveying of 120 storage igloos and four buildings (Buildings 5, 306, 2073, and S-2084).

Upon completion of the fieldwork, a letter report was prepared summarizing the final status survey data. This report has been included for your reference. Upon the acceptance of the FSS by the NRC, all radiological licenses at the SEDA will be terminated and the former storage areas for licensed commodities will be considered suitable for unrestricted use.

If you have any questions or concerns regarding this letter report, please do not hesitate to call me at (617) 457-7900.

Sincerely,

Katie Kadlubek for

Todd Heino, P.E.
Program Manager

cc: S. Absolom, SEDA
C. Bethany, NYSDOH
M. Greene, USACOE – Huntsville
T. Enroth, USACOE – NY District
K. Healy, USACOE – Huntsville
J. Cleary, SEDA

FACSIMILE TRANSMITTAL HEADER SHEET

For use of this form, see AR 25-11; the proponent agency is ODISC4

COMMAND/ OFFICE	NAME/ OFFICE SYMBOL	OFFICE TELEPHONE NO. *(AUTOVON/Comm.)*.	FAX NO. *(AUTOVON/Comm.)*.
FROM: Thomas Enroth	CENAN-PP-M Seneca Office	607/869-1255	607/869-1251
TO: Kurt Piehl			630-252-4336

CLASSIFICATION	PRECEDENCE	NO. PAGES *(Including this Header)*	DATE-TIME	MONTH	YEAR	RELEASER'S SIGNATURE
		3	03	04	03	Thom Enroth

REMARKS

FYI - NRC response letter

Space Below For Communications Center Use Only

DA FORM 3918-R, JUL 90 DA FORM 3918-R, AUG 72 IS OBSOLETE USAPPC V3.00

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@anl.gov]

Sent: Thursday, March 20, 2003 4:49 PM

To: John Cleary (clearyj@seneca-hp.army.mil); Tomas Enroth (Enroth, Thomas R NAN02 [Thomas.R.Enroth@nan02.usace.army.mil])

Cc: Jacqueline Travers (jacqueline_travers@parsons.com); Kamboj, Sunita; Sydelko, Thomas G.

Subject: NRC March 13 LTP comments

All,

I have looked over the subject comments with Sunita and we are both of the opinion that the comments raise fairly minor issues only. The following summarizes the issue raised in each comment and its implications in terms of required actions or responses as we see them:

Comment 1: The comment refers to the statement in Sec 2.2.1 that past release sites that were not remediated to "present day standards" would be classified as Class 1 or Class 2 areas under MARSSIM. The issue raised is what "present day standard" is being referred to? The intent of this text was, as indicated in the comment, to refer to the prevailing dose criterion, whether it be NRC's 25 mrem/yr standard, or the State's 10 mrem/yr standard. However, I don't think the issue ever comes up for any of the license termination areas. None of these areas, to my knowledge, were former release sites, so the issue is basically moot. The statement in the LTP was expressing a generic approach that would have been used if such areas were encountered.

Comment 2: The comment has to do with the size of some survey units in the previous Class 1 survey of Building 612. A few of the survey units were as large as 250 m2 and exceeded the suggested maximum size of 100 m2 in MARSSIM. The LTP text acknowledges this problem and states that upon review of the survey data in 612 (and in these survey units in particular) if "residual contamination levels are found to be well below action levels, the few such survey units may be found to be of acceptable size to support release decisions." The intent here being that, in such cases, the building would be reclassified to Class 2, which would allow the bigger survey units (up to 1000 m2). The comment allows for the option of reclassifying the building and this should be considered if the data support it.

for survey units >100m²

✓ **Comment 3:** The comment seeks clarification as to whether each storage bunker would be surveyed individually as a class 3 survey unit. That was the intent of the LTP and that was presumably what was done in the field. In which case there is no issue and this should be confirmed in the response to the NRC.

Comment 4: This comment points out a valid inconsistency in the LTP, which states on the bottom of p. 5-4 that contamination, if present, is expected to be confined to floors for all buildings. It further states that walls and ceilings in all buildings will receive only biased scanning surveys. The comment points out that for Class 1 and Class 2 buildings, such an approach would require sub-classifying walls and ceilings at lower levels (Class 2 or 3), which is not called for in the LTP. In any case, some direct measurements would be required at least on the lower walls for buildings/rooms classified as class 1 or 2. Affected buildings include 612 (all class 1), and buildings 5, 306, 2073, and S-2084, portions of which include a total of 21 class 2 survey units. Such direct measurements on walls might well have been taken in the actual surveys conducted, in which case the comment is addressed. If not, some direct measurements on lower walls (perhaps 10 per room) in the affected rooms might have to be taken.

Direct measurement taken?

Comment 5: The comment asks that Sec 5.4 address the classification of soil survey areas outside of buildings. Sec 5.5.1.2 indicates that all storage

bunkers "and surrounding grounds" will be surveyed as Class 3 areas. Sec 5.4 currently does not address outdoor survey units or their classification. The comment would require that Sec 5.4 be revised, presumably, to reflect the approach that was actually done in the field. Since class 3 areas are of unlimited size, a single class 3 area might be identified to encompass all outdoor areas under the LTP. Only biased sampling is required in Class 3 areas. It is assumed that such sampling was conducted. — ? WAS IT

Comment 6a: This comments indicates that some survey parameters might change, e.g., the required number of direct measurements in a survey unit, if final DCGLs are different from those in the LTP. It appears that such changes are unlikely, as the LTP over specified the number of samples required as compared to what MARSSIM indicated. Further, if the revised DCGLs are approved, the differences would be small and, for the most part, toward fewer samples (somewhat higher final DCGLs). ?

Comment 6b: This comment raises the issue of data quality assessment. DQA requires reviewing the sufficiency of the data collected after the fact when the actual standard deviation of measurements is known. The LTP assumed an RSD of 30% as suggested in MARSSIM. Again, impacts should be minor or non-existent since sample numbers were over-specified and contamination levels are very low.

Perhaps we could discuss these comments as a group in a call next week (week of March 24). It would be good to get everyone's perspective on these issues.

Regards,

Kurt

MEMORANDUM OF CALL — Previous editions usable

TO: John

☒ YOU WERE CALLED BY— ☐ YOU WERE VISITED BY—

ED CAVANAUGH

OF (Organization) TOBY

☒ PLEASE PHONE ▶ (Enter area code, if necessary) 570-895-6447 ☐ DSN

☐ WILL CALL AGAIN ☐ IS WAITING TO SEE YOU

☐ RETURNED YOUR CALL ☐ WISHES AN APPOINTMENT

MESSAGE

Money from TMDE support

1-18-02

last year - $7,793.68

mail MIPR to Sally Helm in Chambersburg

Get fax Ed copy first to see

RECEIVED BY	DATE	TIME
Tom G	1-4-02	08:55

NSN 7540-00-634-4018
50363-112

OPTIONAL FORM 363 (Rev. 7-94)
General Services Administration
*U.S. Government Printing Office: 1994 — 300-891/00007

FACSIMILE TRANSMITTAL HEADER SHEET

From: U.S. Army TMDE Support - Region 1
ATTN: AMSAM-TMD-A
11 Hap Arnold Boulevard
Tobyhanna, PA 18466-5104

FAX No: DSN 795-6628/7189 Commercial (570) 895-6628/7189

Name: *Edward T. Cavanaugh*

Telephone No: DSN 795-6447 Commercial (570) 895-6447

TO	NAME	OFFICE	FAX No.
1	John Cleary	607-869-1285	607 869-1157 (ATT)
2			
3			
4			
CC			

CLASSIFICATION	NO. PAGES (Incl Header)	DATE	TIME	RELEASER'S SIGNATURE
U	2	26 FEB 02	10:15	ED

REMARKS

☐ FOR YOUR INFORMATION ☒ PER CONVERSATION ☐ AS REQUESTED
☐ ACTION ☐ PREPARE REPLY ☐ COMMENT ☒ COORDINATION

phone conv: t/ed Cavanaugh 13 Feb 03. No balance left in account. Last year we spent $6,279.88 of the 10K. Remainder was deobligated (sent back to NYC?) Bottom line - they would need more funds to calibrate equip.

Δ = $3720.12

DA FORM 3918-R (modified)

ACCEPTANCE OF MIPR/CUSTOMER ORDER

264245

PPMD-MILITARY
26 FEDERAL PLAZA,CEMAH-PP-M

NEW YORK,NY 10278

MIPR Number	Amendment	Date	MIPR Change Amount
W16ROE20366350	00	05 FEB 2002	$10,000.00

ACCEPTANCE DATE: 19 FEB 2002

The MIPR identified above is accepted and the items or services requested will be provided through reimbursement (Category I). This acceptance is qualified because of anticipated contingencies as to final prices. Changes in this acceptance figure will be furnished periodically upon determination of definitized prices, but prior to the submission of billings.

CATEGORY I (Reimburseable)		CATEGORY II (Direct Cite)	
PRIOR REIMB VALUE		PRIOR DC VALUE	
AMENDMENT AMOUNT	$10,000.00	AMENDMENT AMOUNT	$0.00
TOTAL REIMB VALUE	$10,000.00	TOTAL DC VALUE	$0.00

TOTAL MIPR VALUE $10,000.00

_____ Additional funds in the amount of _____ are required.

_____ Funds in the amount of _____ are not required and may be withdrawn.

_____ Attached MIPR returned not accepted (Rejected).

Remarks:
- Accepted as OMA

AUTHORIZED ACCEPTING OFFICIAL: ORDER TYPE: ECON
ACCEPTING ACTIVITY:

Ronnie L. Cam

FOR: HARRIETT LITTLEPAGE C, OP BR, PROG AND BUD, RMD
U.S. Army Aviation & Missile Command
AMSAM-RM-PB-OP, Building 5300
Redstone Arsenal, AL 35898-5096
DSN 746-1758/7205 OR COMM (256) 876-1758/7205

DIST: CUSTOMER
COCP

AMSAM-TMD-MB

Replaces DOD Form 448-2

TOTAL P.02

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@anl.gov]
Sent: Friday, December 13, 2002 4:11 PM
To: Tomas Enroth (Enroth, Thomas R NAN02 [Thomas.R.Enroth@nan02.usace.army.mil]); John Cleary (clearyj@seneca-hp.army.mil)
Subject: FW: teleconference number for Tuesday, 12/17 call with Seneca Arm y Depot


Table 6.8 Input parameters for...


parameter selection process.pp...


DCGL Derivation.ppt


Revised Table 6.2 without rado...

Tom, John,

We took the liberty to send the attached materials to NRC to allow them to
be ready for our Tuesday call. We have not included the results of the runs.
We also identified 5 items to discuss regarding the revised DCGL calculations as shown below in Sunita's message below. We can dry run this
with you on Monday at 2 pm your time.

Kurt

-----Original Message-----
From: Kamboj, Sunita
Sent: Friday, December 13, 2002 2:33 PM
To: 'Elizabeth Ullrich'
Cc: Picel, Kurt C.; Sydelko, Thomas G.
Subject: RE: teleconference number for Tuesday, 12/17 call with Seneca Army
Depot

Betsy,

Hi! I am sending two figures and two tables. Figures describe the parameter
selection process and the DCGL derivation process. Tables include the input
parameters we would be using in deriving DCGLs for the resident farmer and
building occupancy scenarios, respectively. I will like you to send these to
everyone at your end who will be attending the conference call. We will like
to discuss these in the conference call.

The differences in the previous DCGL derivation and new DCGLs:

(1) we will use the parameter selection process to get the input for the deterministic run,
(2) we will also calculate DCGL from the probabilistic run,
(3) peak of the mean dose will be used to derive the probabilistic DCGLs
(4) radon inhalation pathway will not be included,
(5) for the building DCGLs, instead of having a matrix of room sizes, we will assign distribution to room size.

Please let me know if you have any questions.
Thanks
Sunita Kamboj
Tel:630-252-5457

-----Original Message-----
From: Elizabeth Ullrich [mailto:EXU@nrc.gov]
Sent: Tuesday, November 26, 2002 7:59 AM
To: Kamboj, Sunita; Andy Campbell; John Kinneman; Jon Peckenpaugh; clearyj@seneca-hp.army.mil
Subject: teleconference number for Tuesday, 12/17 call with Seneca Army Depot

To: Andy Campbell, NRC; John Kinneman, NRC; Jon Peckenpaugh, NRC; John Cleary, Seneca Army Depot; Sunita Kamboj, ANL

The following number should be used for our teleconference on Tuesday, 12/17. We have this line available from 2:00 pm - 3:00 pm EST:

1-800-638-8081
Passcode: 9355#

Betsy

Kurt 630/252-4018 Conference call # 1-800-638-3081 Passcode is: 9355# 2-3 Tuesday

Table 6.8 Input Parameters Used at Seneca Army Depot Site for Probabilistic and Deterministic RESRAD-BUILD Analysis

Input Parameter	Units	Type[a]	Priority	Deterministic[b]	Probabilistic analysis				Remarks
					value/ distribution	Distributions statistical parameters[c]			
						1	2	3	
External dose conversion factor	(mrem/yr) per (pCi/g)	M	3	Nuclide specific	Nuclide specific	NR[d]	NR	NR	Values are from Federal Guidance Report No.12 (FGR-12).
inhalation dose conversion factor	mrem/pCi	M	3	Nuclide specific	Nuclide specific	NR	NR	NR	Values are from Federal Guidance Report No.11 (FGR-11).
Ingestion dose conversion factor	mrem/pCi	M	3	Nuclide specific	Nuclide specific	NR	NR	NR	Values are from Federal Guidance Report No.11 (FGR-11).
Air submersion dose conversion factor	(mrem/yr) per (pCi/m^3)	M	3	Nuclide specific	Nuclide specific	NR	NR	NR	Values are from Federal Guidance Report No.12 (FGR-12).
Exposure duration	days	B	3	365.25	365.25	NR	NR	NR	To match the occupancy period of 365.25 days in NUREG/CR-5512 building occupancy scenario.
Indoor fraction	none	B	2	0.6792	0.6792	NR	NR	NR	Resident spends16.3 h/d inside the building. The value greater than the indoor fraction of 0.6571 used in NUREG/CR-5512 resident scenario.
Number of evaluation times	none	P	3	1	1	NR	NR	NR	Dose is calculated at the time when the building is released for all the radionuclides of concern including progeny.
Time	yr	P	3	0	0	NR	NR	NR	Dose is calculated for one year exposure at the time (t =0 yr) building is released
Number of rooms	none	P	3	1	1	NR	NR	NR	NUREG/CR-5512 building occupancy scenario assumes only one contaminated room.
Deposition velocity	m/s	P	2	8.52E-5	Loguniform	2.7E-6	2.7E-3		Distribution from NUREG/CR-6697. Based on the guidance provided in NUREG/CR-6676, deposition velocity and resuspension rate were positively correlated (correlation coefficient = 0.9).
Resuspension rate	1/s	P, B	1	6.22E-8	Loguniform	2.5E-11	1.3E-5		Distribution from NUREG/CR-6697. Based on the guidance provided in NUREG/CR-6676, deposition velocity and resuspension rate were positively correlated (correlation coefficient = 0.9).
Room height	m	P	2	3.25	Uniform	2.5	4.0		To capture variability in room heights in different survey units at Seneca Army Depot
Room area	m^2	P	2	141	Loguniform	10	2000		To capture variability in room sizes in different survey units at Seneca Army Depot. Correlated with the source area, correlation coefficient = 0.99
Air exchange rate for building and room	1/h	B	2	1.52	1.52	NR	NR	NR	Median of the distribution from NUREG/CR-6697
Net flow	m^3/h	B	3	NR	NR	NR	NR	NR	Not required because only one room model is used.
Outdoor inflow	m^3/h	B, P	3	NR	NR	NR	NR	NR	Outdoor inflow is calculated from room volume and air exchange rate.

Number of receptors	none	B	3	1	1	NR	NR	NR	Dose is calculated for one receptor.
Receptor room	none	B	3	1	1	NR	NR	NR	Only one room model is used.
Receptor location	m	B	3	0,0,1	0,0,1	NR	NR	NR	At 1-m height from the center of the contaminated floor surface.
Receptor time fraction	none	B	3	1	1	NR	NR	NR	Most conservative value
Receptor inhalation rate	m^3/d	M, B	2	23.5	23.5	NR	NR	NR	For the building resident it matches the breathing rate of the resident in the resident farmer scenario of NUREG/CR-5512
Receptor indirect ingestion rate	m^2/h	B	2	9E-5	9E-5	NR	NR	NR	Median of the distribution from NUREG/CR-6697
Number of sources	none	P	3	1	1	NR	NR	NR	Floor of the room is contaminated.
Source type	none	P	3	Area	Area	NR	NR	NR	Only surface source is considered in building occupancy scenario.
Source room or primary room	none	P	3	1	1	NR	NR	NR	Only one room is considered.
Source direction	none	P	3	z	z	NR	NR	NR	The direction perpendicular to the exposed area.
Source location	m	P	3	0,0,0	0,0,0	NR	NR	NR	Source center location.
Source area	m^2	P	2	141	Loguniform	10	2000		Correlated with the room area (Floor is contaminated), correlation coefficient = 0.99
Air release fraction	none	B	2	0.07/1.0	0.07/1.0	NR	NR	NR	For all radionuclides except tritium value used (0.07) is equal to the upper bound value for noncombustible solids from NUREG/CR-6697 and the value used for tritium (1.0) is the recommended value for gaseous form of tritium.
Direct ingestion rate	1/h	B	2	5.5E-8	5.5E-8	NR	NR	NR	Calculated from the default ingestion rate of 1.1E-4 m^2/h in NUREG/CR-5512 building occupancy scenario and the maximum contaminated area of 2,000 m2.
Removable fraction	none	P, B	1	0.1	0.1	NR	NR	NR	10% of the contamination is removable (NUREG/CR-5512 building occupancy scenario default).
Time for source removal or source lifetime	days	P, B	2	33230	Triangular	1,000	10,000	100,000	Distribution from NUREG/CR-6697
Radon release fraction	none	P, B	3	0	0	NR	NR	NR	Radon inhalation pathway is suppressed.
Radionuclide concentration	dpm/m^2	P	3	100	100	NR	NR	NR	DCGLs are independent of initial radionuclide concentration
Shielding thickness	cm	P, B	2	0	0	NR	NR	NR	No shielding is assumed between the source and receptor.
Shielding density	g/cm^3	P	1	NR	NR	NR	NR	NR	No shielding is assumed between the source and receptor.
Shielding material	none	P	3	NR	NR	NR	NR	NR	No shielding is assumed between the source and receptor.

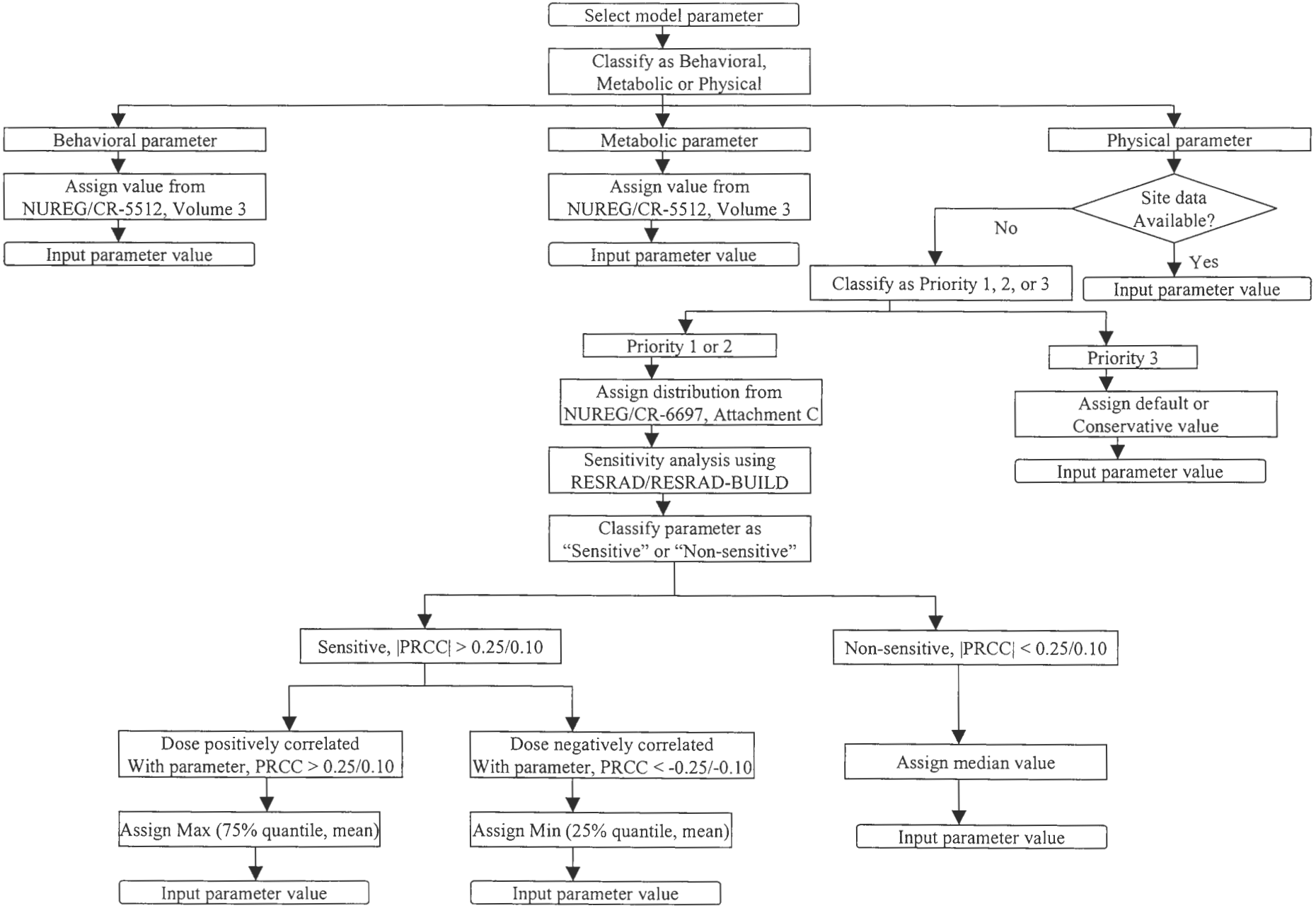
[a] P = physical, B = behavioral, and M = metabolic; when more than one parameter type is listed, the more conservative parameter type is used in the analysis.

[b] Parameter values used in the deterministic run unless changed because of sensitivity analysis.

[c] For uniform and loguniform distributions, parameter 1 is the minimum and parameter 2 is the maximum value. For triangular distribution, parameter 1 is the minimum value, parameter 2 is the most likely value, and parameter 3 is the maximum value of the distribution.

[d] NR = not required for the analysis (RESRAD-BUILD parameters for which distributions are not developed or for which statistical parameters are not required.

Fig. 6.3 Parameter Selection Process



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

September 4, 2002

Docket No. 04008526 License No. SUC-1275
Control No. 130894

Stephen M. Absolom
Commander's Representative
Department of the Army
Seneca Army Depot Activity
ATTN: SDSSE-CO
5786 State Route 96
Romulus, NY 14541-5001

SUBJECT: DEPARTMENT OF THE ARMY, VOIDANCE OF APPLICATION FOR LICENSE AMENDMENT, CONTROL NO. 130894

Dear Mr. Absolom:

This concerns the subject application for an Amendment to your material license to approve the "Seneca Army Depot Activity License Termination and License Release Plan" (the Plan) dated January 2002. The review of the acceptability of the revised Derived Concentration Guideline Levels (DCGLs), including the output files for RESRAD and RESRAD-BUILD, is complete. Based on staff evaluation of the dose modeling and independent analysis by the staff, the dose modeling information submitted with the above documentation is not adequate to approve your request. The proposed DCGLs do not assure that area doses from exposure to residual material at this site is sufficiently low to allow unrestricted release in accordance with 10 CFR 20.1402. Although the critical group, scenarios, and pathways identified for this site and used in your analysis are acceptable, there is insufficient justification of the site-specific parameters used to determine that the selected values are representative of the site or are conservative. In your RESRAD calculations you used approximately 26 site-specific parameters out of a total of about 95 possible input parameters. You must perform a sensitivity analysis of the site-specific input parameters in order to evaluate which of these parameters have a significant impact on the calculated dose. Such a sensitivity analysis may be performed using RESRAD Version 6.1. Once those parameters that have a significant impact on the dose are identified, you must demonstrate either that the values you choose are conservative or that they are representative of the site by providing the results of on-site testing and analyses.

Also, uncertainty analysis of the DCGLs should be performed, or a discussion of why uncertainty analysis is not necessary should be provided.

The NRC regional and headquarters staff is available to meet with you to discuss the modeling and your site in more detail and to assist you in the preparation of an acceptable submission. You may contact me at (610) 337-5040 when you are ready to arrange such a meeting.

Since it will take some time to develop the additional information regarding the basis for the proposed DCGLs, we have voided the current application. This action is taken without prejudice to the resubmission of your request.

In accordance with 10 CFR 2.790, a copy of this letter will be placed in the NRC Public Document Room and will be accessible fro the NRC web site at http://www.nrc.gov/reading-rm.html .

Sincerely,

Original signed by John D. Kinneman

John D. Kinneman, Chief
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety

cc:
John Cleary, Radiation Safety Officer

NRC Fieldcrew July 2002 - Sept. 2002

Ben McAllister
Ron McConn
John Hackett
Beth Wasserman
Jessica Moore
Allison Love
Katie Kadlubak
Lisa Chow

U.S. Army Corps of Engineers, New York District
Seneca Office for Project Management
CENAN-PP-M
Building 125, Seneca Army Depot
5786 State Route 96, Romulus, NY 14541-5001

From: Thomas R. Enroth
Phone: 607-869-1255
Fax: 607-869-1251

Number of Pages including Cover: 3 **Date:** 9/9/02

TO: Jackie Travers / Todd Heino

FAX #: 781/401-2575

COMMENTS:

Hello,

We received this letter from NRC today. ANL is looking at it too and we will need to discuss a game plan perhaps Friday.

Tom

U.S. Army Corps of Engineers, New York District
Seneca Office for Project Management
CENAN-PP-M
Building 125, Seneca Army Depot
5786 State Route 96. Romulus. NY 14541-5001

From: Thomas R. Enroth
Phone: 607-869-1255
Fax: 607-869-1251

Number of Pages including Cover: 3 **Date:** 9/9/02

TO: Tom Sydelko

FAX #: 630/252-4624

COMMENTS:

Hello Tom -

This is the NRC letter we received today. We will discuss this later on, perhaps Friday, with the Army and Parsons too.

Tom

Table 2-2
Information Summary for Buildings under License SUC-1275 and Other NRC Licenses

Buildings/Structures	Radiological Status	Radionuclides of Concern	Area Classification for Final Status Survey	Type and Extent of Contamination	Other Licenses Affected	Operations Performed
Building 612	Building was surveyed in 1999. Walls, ceilings and floors were surveyed.	U-234, U-235, and U-238 (depleted uranium)	Class 1	Contamination, if present, is expected only on floor surfaces.	SUC-1380	Unpackage, inspect, and repackage DU ammunition
Building 5 Building 306 Building S-2084 Building 2073	During operations, periodic surveys were conducted and no elevated levels of radioactivity were ever detected. The last of the depleted ammunition was shipped off in September 1999.	U-234, U-235, and U-238 (depleted uranium)	Class 2	Contamination, if present, is expected only on floor surfaces	SUC-1380	Staging point to prepare DU ammunition for shipment
Storage Bunker A0701		Pm-147	Class 3	Contamination, if present, is expected only on floor surfaces	BML 12-00722-07 license managed by TACOM Rock Island	The license was for the possession of Pm-147 in the light anti-tank rocket system

Table 2-2 (Con't)

Buildings/Structures	Radiological Status	Radionuclides of Concern	Area Classification for Final Status Survey	Type and Extent of Contamination	Other Licenses Affected	Operations Performed
Of 11 pitchblende storage bunkers, E0801 and E-802 were under NRC license for subsequent DU storage	Were decontaminated and released for unrestricted use in 1985	Ra-226 (pitchblende ore) U-234, U-235, U-238	Class 3	Contamination, if present, is expected only on floor surfaces	SUC-1380	During the 1940s, the Depot stored barrels of pitchblende ore
Of 64 special weapons storage bunkers, A0201, A0316, A0317, and A0508 were under NRC license for later DU storage	Were surveyed in 1992 and 1993 and released for unrestricted use	Pu-239, U-234, U-235, U-238, and H-3	Class 3	Contamination, if present, is expected only on floor surfaces	SUC-1380	For special weapons storage
Ammunition Bunkers (see Table 2-1)	During operations, periodic surveys were conducted and elevated levels of radioactivity were never detected. The last of the depleted ammunition was shipped off in September 1999.	U-234, U-235, and U-238 (depleted uranium)	Class 3	Contamination, if present, is expected only on floor surfaces	SUC-1380	Storage of the packaged DU ammunition

Table 2-2 (Con't)

Buildings/Structures	Radiological Status	Radionuclides of Concern	Area Classification for Final Status Survey	Type and Extent of Contamination	Other Licenses Affected	Operations Performed
Warehouse 356	NRC released building for unrestricted use Amendment 16 to STC-133 on 12/22/94	Natural thorium	Class 3	Contamination, if present, is expected only on floor surfaces	STC-133 managed by Defense Logistic Agency	Warehouse was used to store Columbite and tantalum ore

Table 5-1
Summary of Recent Building Surveys

Building No.	Date of Survey	Radio-nuclides of interest	Types of surveys performed	Instruments used	MDA (dpm/100 cm2)	Results
5		U-234, U-235, and U-238 (DU)	Dry swipe samples collected and analyzed at Redstone Arsenal, AL; walk-thru gamma survey	laboratory counters for swipes, Ludlum Model 3 pancake G-M for gamma rates	Alpha: 2 Beta: 6 Gamma: 109 Backgrd: 0.02 mR/hr	No results above background
306		U-234, U-235, and U-238 (DU)	As for Bld 5	As for Bld 5	As for Bld 5	No results above background
356		Th-232	As for Bld 5	As for Bld 5	As for Bld 5	No results above background
612	3/99 to 5/99	U-234, U-235, and U-238 (DU)	Over 2-m grid: Direct and swipes: alpha/beta/gamma Surface Scans alpha/beta/gamma 100 % scans	Hand-held and floor monitor gas-proportional counters, FIDLER low-energy gamma detector, laboratory counters for swipes	Swipes and gamma rate: as for Bld 5 Static direct: Alpha: 20/40 Beta: 1000/2000 Gamma: 16,000	No detects above action levels. (Data to be reviewed against revised action levels.)
2073		U-234, U-235, and U-238 (DU)	As for Bld 5	As for Bld 5	As for Bld 5	No results above background
S-2084		U-234, U-235, and U-238 (DU)	As for Bld 5	As for Bld 5	As for Bld 5	No results above background
Storage Bunkers		DU (all), Ra-226 (2 bunkers), H-3 and Pu-239 (4 bunkers)	As for Bld 5	As for Bld 5	As for Bld 5	No results above background

Enroth, Thomas R NAN02

From: Enroth, Thomas R NAN02
Sent: Wednesday, December 12, 2001 2:11 PM
To: 'Kathleen Kadlubak'
Subject: RE: NRC Buildings

Katie,

Here is the square footage of each building requested:

Building 5- 11,754
Building 306- 4,901
Building S-2084- 5,480
Building 2073- 3,683
Warehouse 356- 203,145

tom

-----Original Message-----
From: Kathleen Kadlubak [mailto:Kathleen.Kadlubak@parsons.com]
Sent: Wednesday, December 12, 2001 1:45 PM
To: Enroth, Thomas R NAN02
Cc: Jacqueline Travers
Subject: NRC Buildings

Tom:
Would you happen to have the square footage of the following buildings that are included as part of the NRC License Termination:
Building 5
Building 306
Building S-2084
Building 2073
Warehouse 356

We are trying to figure out what the level of effort would be to execute the Termination Plan. If the square footage numbers are not accessible, are there comparably sized buildings in SEAD-12?

Thanks,
Katie Kadlubak

Swipes - cost $,41¢ → 10 — 1 Oct

DRAFT

Discussed w/ Parsons (Jackie + Katie) 1 Aug 02

PARSONS

MEMORANDUM

Bill

TO: Tom Enroth, USACE, NY District **DATE:** July 30, 2002

Cc: **Steve Absolom, SEDA**
Kevin Healy, USACE, Huntsville
Marshall Green, USACE, Huntsville
Tom Sydelko, ANL

1 888-395 9754

FROM: Jacqueline Travers, Katie Kadlubak, Parsons **COPIES:** File

Katie 781-401-2449

SUBJECT: NRC License Termination Fieldwork

There are a few issues that need to be resolved in regards to the NRC License Termination fieldwork:

1) Building 2073 has an additional room, approximately 8m x 18m x 3.5m, that was not included in the original survey plan. The room appears to be new in relation to the rest of the building. Building 2073 also has a fiberglass insulation covered ceiling in the main room (Room 1) that will be very difficult to grid and to survey due to the fiberglass not being in tact everywhere and the height of the center of the ceiling (approximately 8 meters). It is recommended that the engineering space attached to Building 2073, which is currently a Class II survey unit, be reclassified as a Class III survey unit (the same as all of the engineering spaces in SEAD-12); that the walls and floors of the main room and the new room be surveyed as Class II survey units. If no residual radiological contamination is found on the walls and floor, the ceilings on both rooms would be completed as a Class III survey. → no

OK do as planned

2) Building 2084 has a ceiling that has several dozen wooden girders along the ceiling. If the building is to be surveyed as a Class II survey unit then the wooden panels will need it be disassembled. no Parsons recommends that the ceiling be reclassified as a Class III survey unit where the reachable sections of the wood girders are surveyed. If no indications of residual radioactivity are located, then demolition of the wood girders would not have to occur.

may need to modify fieldwork

✓ It should be noted that buildings 2073 and 2084 are also included in the Explosive Building Survey. It is known that Parsons has not completed any sampling in either of those buildings. Radiological surveying has continued in these buildings with half-faced air purifying respirators and tyvex coveralls. OK

Let us know what a convenient time is for you go over these issues so we can continue to move forward on the fieldwork.

Thanks.

C:\DOCUME~1\e3ppmtre\LOCALS~1\Temp\NRC_7-30-02.doc
PARSONS

• OTHER – may need to use more than 1 igloo for background. Finding high α in some near vents

31

Sunday
March 2002

Easter

S	M	T	W	T	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

February 2002

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

April 2002

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

✓ Task Compl··
→ Planned For··
× Task Deleted
G ✓ Delegated Task
● In Process

Appointment Schedule

8

9

10

11

12

1

2

3

4

5

6

7

8

↓ ABC Prioritized Daily Task List

TASK #

deleted 5

fixed up 4

deleted 6

added 7 for the PM

636

396
87

483
12

495

≈510 page

Daily Expenses

There is always a chance that he who sets himself up as his brother's keeper will end up by being his jailkeeper.
— Eric Hoffer

Daily Record of Events

Funding for Survey

now proposal @ ≈ 630K?

we have := 483 @ HNC which includes the 87K ($87546.59) sent back.

May need more funds?

PARSONS

30 Dan Road, Canton, Massachusetts 02021-2809 • (781) 401-3200 • Fax (781) 401-2575

August 7, 2002

Mr. Stephen Howard
US Army TMDE Activity, ASAM-TMD-SR
Building 5317
Redstone Arsenal, AL 35898-5000

Re: NRC License Termination Work
Seneca Army Depot Activity, Romulus, NY
Price for Swipe Sample Analyses
741199-02000/1022

Dear Mr. Howard:

The purpose of this letter is to clarify recent discussions with you regarding pricing for swipe samples collected at the Seneca Army Depot Activity (SEDA), Romulus, NY. Parsons is currently collecting approximately 5000 swipe samples for the Army to support termination of their NRC licenses at SEDA.

Originally, we were quoted a price of $0.41 for analysis of each swipe. We understand that due to government funding cutbacks, this price will increase to $10.00 per swipe for swipes processed after October 1, 2002. In an effort to assist your laboratory in processing the swipes for this project before this date, Parsons will send you approximately 500-700 swipes per week between now and September 20, 2002.

If you have any questions regarding this proposed sampling schedule, please contact Ms. Jacqueline Travers at (781) 401-2535 or Ms. Katie Kadlubak (781) 401-2449.

Very truly yours,

PARSONS

Todd Heino, P.E.
Program Manager

TH/jmt

cc: Mr. Marshall Greene, USACOE – Huntsville
Mr. Stephen Absolom, SEDA
Mr. Thomas Enroth, USACOE – NY District
Mr. John Cleary, SEDA

P:\PIT\Projects\SENECA\NRC Term\Fieldwork2002\redstone.doc

MILITARY INTERDEPARTMENTAL PURCHASE REQUEST PAGE 001

FSC	CONTROL SYMBOL NO.	DATE PREPARED	MIPR NUMBER	AMEND NO.
		06-JUN-2002	W16R0E02666598	002

TO: USAED HUNTSVILLE
CEHNC-RM-B
P.O. BOX 1600

HUNTSVILLE ,AL 35807-4301

FROM: PPMD-MILITARY
CENAN-PP-M
26 FEDERAL PLAZA
ROOM 2119

NEW YORK NY 10278

ITEMS __ ARE __ ARE NOT INCLUDED IN THE INTERSERVICE SUPPLY SUPPORT PROGRAM AND REQUIRED INTERSERVICE SCREENING __ HAS __ HAS NOT BEEN ACCOMPLISHED.

ITEM NO.	DESCRIPTION (Federal stock number, nomenclature, specification and/or drawing No., etc.)	QTY	UNIT	ESTIMATED UNIT PRICE	ESTIMATED TOTAL PRICE
1	FUNDS ARE PROVIDED TO SUPPORT BRAC95 PROJECT RAD SURVEY AMSCO 61366S13 AT SENECA AD, NY.	0	LS	.00	$87,547.58

ACCOUNTING CLASSIFICATION 97 NA X 0510.40F1 E3 2000 08 8011 61366S13000 25EA KC73HC NA 19016 00008735
WORK CAT CODE: 72180 WORK CAT ELEM CODE: 99999
INITIAL ACCOUNTING CLASS 97 X 0510 40F1 08 61366S13000

CH #2 - ADDITIONAL FUNDS IN THE MAOUNT OF $87,547.58 ARE HEREBY PROVIDED TO SUPPORT RAD SURVEYS AMSCO 61366S13000 @ SENECA AD. ADDITIONAL INFORMATION WILL BE PROVIDED UNDER SEPARATE COVER BY THOMAS ENROTH 607.869.1255 (VOICE) AND 607.869.1251 (FAX).

Please have the accepting official sign below and return to the FINANCIAL POC address. EXPIRATION DATE 30-DEC-2004

RA TECHNICAL POC: THOMAS R ENROTH CENANPP-M 607-869-1255
RA FINANCIAL POC: JOHNNY W DOWNING CENAN-PP-M 212-264-4059
RA FINANCIAL POC ADDRESS: PPMD-MILITARY
26 FEDERAL PLAZA
ROOM 2119

NEW YORK NY 10278
PA TECHNICAL POC: DAVE SHEETS (256) 895-1353.
PA FINANCIAL POC: JON RICHARDS (256) 895-1458, FAX (256) 895-1176.

__ DIRECT FUND CITE
ACCEPTED __ REIMBURSABLE _____ DATE _____ TITLE_____

SEE ATTACHED PAGES FOR DELIVERY SCHEDULES, PRESERVATION AND PACKAGING INSTRUCTIONS, SHIPPING INSTRUCTIONS AND INSTRUCTIONS FOR DISTRIBUTION OF CONTRACTS AND RELATED DOCUMENTS.

GRAND TOTAL $605,547.58

TRANSPORTATION ALLOTMENT (Used if FOB Contractor's plant)

MAIL INVOICES TO (Payment will be made by)
USACE FINANCE CENTER
E3 - NEW YORK DISTRICT
5720 INTEGIRTY DRIVE

MILLINGTON TN 38054-5005

FUNDS FOR PROCUREMENT ARE PROPERLY CHARGEABLE TO THE ALLOTMENTS SET FORTH ABOVE, THE AVAILABLE BALANCES OF WHICH ARE SUFFICIENT TO COVERTHE ESTIMATED TOTAL PRICE.

ELECTRONICALLY SIGNED BY
BETZAIDA ANDUJAR
OPERATING ACCOUNTANT 06-JUN-2002

AUTHORIZING OFFICER	ELECTRONICALLY SIGNED BY	DATE
JOHNNY W DOWNING PROGRAM ANALYST	JOHNNY W DOWNING	06-JUN-2002

DD FORM 448

ARGONNE NATIONAL LABORATORY
ENVIRONMENTAL ASSESSMENT DIVISION
TELECOMMUNICATION MESSAGE

DATE: 9-17-01 NUMBER OF PAGES (INCLUDING COVER SHEET): 5

TO: Tom Ensworth FAX # 607-869-1251

TEL #

FROM: Kurt Picel FAX # 630/252-4336

TEL # " 4018

Argonne National Laboratory
Environmental Assessment Division
9700 South Cass Avenue, Bldg. 900
Argonne, Illinois 60439

Hi Tom,

Here's a shot at a Task Order for the LTP final status surveys. It is based on the SLAC-46 example. Tried to include the essential information from the LTP, some boiler plate not included. Comments please.

—Kurt

If you do not receive all of the pages or if copy is not legible, please call 630/252-5411.

TASK ORDER
Performance of Final Status Survey of NRC Licensed Facilities

1.0 General Statement of Services

The Army is in the process of closing Seneca Army Depot Activity (SEAD) under the Base Realignment and Closure (BRAC) program. As part of this process it will need to terminate or otherwise modify NRC licenses affecting a number of facilities at SEAD. This Task Order is for performing Final Status Surveys in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM, NUREG 1575, Rev 1, August 2000) that will support the unrestricted release of the facilities. In addition, the surveys are to be performed in accordance with the License Termination Plan (LTP) that is currently being reviewed by the NRC.

The LTP presents the derived concentration guideline levels (DCGLs) that constitute the release criteria for the facilities as well as the basic requirements for performing the surveys, including survey unit designations and classifications under MARSSIM. The facilities include Buildings 5, 306, 356, 2073, and S-2084 in their entirety, as well as 120 ammunition storage bunkers in various locations across the site. Portions of the grounds around each of these facilities may also require some level of investigation.

A total of 21 MARSSIM Class 2 survey units and 7 Class 3 units have been designated in the regular buildings. All of the 120 storage bunkers have been designated as a single Class 3 unit.

Following MARRSIM, the LTP determined that 10 direct measurements will be required in each Class 2 survey unit, while BRAC policy has established that commodity storage facilities will be surveyed as Class 3 units using 30 direct measurements. Major portions of the Class 2 areas will also require total coverage scanning, while material samples and swipes will be taken in a limited number of locations based on professional judgement as outlined in the LTP.

2.0 Objective

The objective of this work is to plan and perform final status surveys of the NRC licensed facilities at the Seneca Army Depot Activity in accordance with MARRSIM guidance so that all applicable NRC licenses can be terminated and the facilities released for unrestricted use. These surveys are performed for the purpose of demonstrating that the facilities meet dose-based criteria for unrestricted release, including the 25 mrem dose criterion in 10 CFR 20.1402 and the 10 mrem criterion in New York State TAGM 4003.

3.0 Detailed Description of Services

3.1 General Requirements. All work performed by the A-E shall be designed and implemented in a manner that conforms with this SOW, the approved Work Plans and the requirements of EPA, NYSDEC, and SEDA. This work shall be coordinated with other radiological survey work being performed at SEDA for the purpose of releasing facilities, and shall use survey criteria and methodologies that are consistent with other ongoing surveys. In the event that any conflicts arise, it will be the Huntsville Division Project Manager's responsibility to assure resolution. All work shall be performed under the supervision of a Professional Engineer registered in the State of New York.

3.2 (Task 1) Survey Planning and Design

- The A&E shall prepare, or amend an existing, Work Plan, Quality Assurance Project Plan (QAPP), Health and Safety Plan (H&SP), and Field Sampling and Analysis Plan (FSAP) for performing the required surveys
  - The Work Plan shall include a review of the historical use and a summary of most recent survey data of the buildings and areas to undergo final status surveying.
  - The QAPP shall describe or specify the requirements of the following project elements: project management, sampling and data collection, performance assessment and oversight, and data validation and verification.

- The H&SP shall identify a health and safety officer for the project, shall identify all expected project hazards, and shall identify precautions and protective equipment to protect project personnel from hazards
- The FSAP shall provide locations of direct radioactivity measurements on floor plans or maps, identify portions of building surfaces (walls, ceilings, or floors) to be scanned with field instruments, and identify locations for collection of material samples and swipes in accordance with the License Termination Plan (LTP). It shall specify the instruments to be used for surveys and provide procedures for their use. It shall also specify reference areas to be surveyed.

3.3 (Task 2) Performing Final Status Surveys

- For Class 2 survey units, the A&E shall perform the following activities in accordance with the LTP and MARSSIM:
  - Lay out grid locations of direct measurements of alpha, beta, or gamma activity
  - Collect direct survey measurements of alpha, beta, or gamma activity, as appropriate
  - Perform scanning surveys over portions of floors, walls or ceilings as determined by judgement
  - Collect surface swipes and/or material samples from building surfaces, ventilation ducts, floor drains, or outdoor locations as determined by judgement
  - Perform walk-over gamma surveys of outdoor areas and in certain indoor locations using a FIDLER
- For Class 3 survey units, the A&E shall perform the following activities in accordance with the LTP:
  - Lay out an appropriate number of random locations for direct measurements
  - Collect direct survey measurements of alpha, beta, or gamma activity, as appropriate, at these locations
  - Perform scanning measurements of alpha, beta, or gamma activity in indoor or outdoor locations as determined by professional judgement

3.4 (Task 3) Final Status Survey (FSS) Report

- The FSS report will document that study areas meet the applicable dose criterion for release of the areas for unrestricted use, and will include the following:
  - Reports of survey activities that include raw survey data
  - Results of quality assurance samples
  - Instrument calibration reports
  - Statistical comparisons of study areas to background areas and to derived concentration guideline levels (DCGLs)
  - Sufficient supporting information so that an independent party could reconstruct the results and conclusions of the studies

4.0 Submittals and Presentations

4.1 Format and Content. FSS Reports shall present all data, calculations, analyses, and conclusions based upon them. The Reports, moreover, shall meet the requirements of MARSSIM, namely that they be stand-alone documents that describe the instruments and analytical methods used and the method for converting survey data to appropriate units for comparison to DCGLs. The reports will also demonstrate that data quality objectives for surveys were met, present statistical evaluations of data to demonstrate that release criteria have been met, and discuss the use of investigation levels to ensure that survey units have been correctly classified in accordance with MARSSIM. The reports may follow the format suggested in NRC's "Manual for Conducting Radiological Surveys in Support of License Termination" (NUREG/CR-584, June 1992), or similar format that meets the above content requirements.

[Continue with the usual requirements for drawings, maps, paper size, numbering system, report covers, title page, identification of organizations and preparers. Continue further with requirements for submittals.]

4.2 Presentations. [usual requirements]

4.3 Conference Minutes. [usual requirements]

4.4 Confirmation Notices. [usual requirements]

4.5 Progress reports and Charts. [usual requirements]

4.6 Proposed Schedule. The proposed schedule for the FSS is given below.

Milestone	Date
Assumed notice to proceed	TBD
Draft FSS Work Plan/QAPP/H&S Plan	TBD
Comments to A-E	TBD
Draft-Final FSS Work Plan/QAPP/H&S Plan	TBD
Comments to A-E	TBD
Final FSS Work Plan/QAPP/H&S Plan	TBD
Initiation of Field Work	TBD
Completion of Field Work	TBD
Draft FSS Report	TBD
Comments to A-E	TBD
Draft-Final FSS Report	TBD
Comments to A-E	TBD
Final FSS (assumes no disputes)	TBD
Public Comment Period	TBD
Meetings/Presentations	TBD

4.7 Submittals.

4.7.1 General Submittal Requirements.

4.7.1.1 Distribution. The A-E is responsible for reproduction and distribution of all documents. The A-E shall furnish copies of submittals to each addressee listed in paragraph 4.7.2 in the quantities listed in the document submittal list. Submittals are due at each of the addresses not later than the close of business on the dates shown in paragraph 4.6.

4.7.1.2 Partial Submittals. Partial submittals will not be accepted unless prior approval is given.

4.7.1.3 Cover Letters. [per usual]

4.7.1.4 Supporting Data and Calculations. [per usual]

4.7.1.5 Reproducibles. [per usual]

4.7.2 Addresses. [as appropriate]

4.7.3 Document and Submittal List. [as appropriate]

5.0 Safety Requirements [per usual]

6.0 Quality Assurance Project Plan Requirements

The A-E shall perform all sampling and analysis activities according to the requirements presented in the Work Plan, QAPP, and H&S Plan.

7.0 Soil Boring and Monitoring Well Requirements

Neither soil borings nor groundwater monitoring wells will be required as part of this work. Surface soil sampling may be required on a limited basis if scanning surveys and direct measurements identify areas of soil contamination. Extensive soil sampling would not be required.

8.0 Survey Requirements

All civil surveying shall be completed according to the requirements presented in the Work Plan.

9.0 References

9.1 U. S. Nuclear Regulatory Commission, 2000, *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*, Rev 1, NUREG-1575, Washington D.C., August.

9.2 U. S. Nuclear Regulatory Commission, 1992, *Manual for Conducting Radiological Surveys in Support of License Termination*, NUREG/CR-584, Washington D.C., June.

9.3 U.S. Army, 2001, *Seneca Army Depot Activity License Termination and License Release Plan*, Seneca Army Depot Activity, Romulus, New York, August.

U.S. Army Corps of Engineers, New York District
Seneca Office for Project Management
CENAN-PP-M
Building 125, Seneca Army Depot
5786 State Route 96, Romulus, NY 14541-5001

Fax: 607-869-1251
From: X **Thomas R. Enroth** **Phone: 607-869-1255**

Number of Pages including Cover: 6 **Date:** 17 May 02

TO: Johnny Downing x4059

FAX #: X 5785

COMMENTS:

Johnny -

87.5208.28

I am trying to locate ~~$100K~~ that was returned to NYD from Seneca Army Depot last year when they sent funds to us. Funds were for the "Rad Survey, AMSCO 6136613" Can you shed some light on this and give me a call Monday or Tuesday? I have enclosed the MIPR info they gave me to help find the status of the money.

Thanks -

Tom

01-01

ACCEPTANCE OF MIPR

1. TO *(Requiring Activity Address)(Include ZIP Code)*	2. MIPR NUMBER	3. AMENDMENT NO.
PPMD-Military, CENAN-PP-M 26 Federal Plaza, Room 2119 NY, NY 10278-0090	W16ROE02676635	Amend 1
	4. DATE *(MIPR Signature Date)*: 23 Sep 2000	5. AMOUNT *(As Listed on the MIPR)*: $100,000.00

6. The MIPR identified above is accepted and the items requested will be provided as follows: *(Check as Applicable)*

- a. ☐ ALL ITEMS WILL BE PROVIDED THROUGH REIMBURSEMENT *(Category I)*
- b. ☐ ALL ITEMS WILL BE PROCURED BY THE DIRECT CITATION OF FUNDS *(Category II)*
- c. ☐ ITEMS WILL BE PROVIDED BY BOTH CATEGORY I AND CATEGORY II AS INDICATED BELOW
- d. ☐ THIS ACCEPTANCE, FOR CATEGORY I ITEMS, IS QUALIFIED BECAUSE OF ANTICIPATED CONTINGENCIES AS TO FINAL PRICE. CHANGES IN THIS ACCEPTANCE FIGURE WILL BE FURNISHED PERIODICALLY UPON DETERMINATION OF DEFINITIZED PRICES, BUT PRIOR TO SUBMISSION OF BILLINGS.

7. ☐ MIPR ITEM NUMBER(S) IDENTIFIED IN BLOCK 13, "REMARKS" IS NOT ACCEPTED (IS REJECTED) FOR THE REASONS INDICATED.

8. TO BE PROVIDED THROUGH REIMBURSEMENT CATEGORY I			9. TO BE PROCURED BY DIRECT CITATION OF FUNDS CATEGORY II		
ITEM NO. a.	QUANTITY b.	ESTIMATED PRICE c.	ITEM NO. a.	QUANTITY b.	ESTIMATED PRICE c.
1		-$87,528.28			
d. TOTAL ESTIMATED PRICE		-$87,528.28	e. TOTAL ESTIMATED PRICE		

10. ANTICIPATED DATE OF OBLIGATION FOR CATEGORY II ITEMS	11. GRAND TOTAL ESTIMATED PRICE OF ALL ITEMS

12. FUNDS DATA *(Check if Applicable)*

- a. ☐ ADDITIONAL FUNDS IN THE AMOUNT OF $ _____ ARE REQUIRED *(See justification in Block 13)*
- b. ☒ FUNDS IN THE AMOUNT OF $ 87,528.28 ARE NOT REQUIRED AND MAY BE WITHDRAWN

13. REMARKS

14. ACCEPTING ACTIVITY *(Complete Address)*	15. TYPED NAME AND TITLE OF AUTHORIZED OFFICIAL	
Commander's Representative, Seneca Army Depot Activity 5786 Rt 96, Romulus, NY 14541-5001	STEPHEN M. ABSOLOM, Commander's Representative	
	16. SIGNATURE: Stephen M Absolom	17. DATE: 07/09/01

DD FORM 448-2, JUL 71 (EG) PREVIOUS EDITION WILL BE USED UNTIL EXHAUSTED.

BCW101 SIFS - COST ACCOUNTING INSTL-CD 4
11:28:52 INQUIRY JO-PCCN / 2291 03 JUL 2001
JO-PCN 5WERAD ZGD05610004000800040 SRC 702 1411T 0 % II1RADLE00S0II FZ

	MTD-FUNDED	MTD-UNFUNDED	CTD-FUNDED	CTD-UNFUNDED	DOLA
HRS REG CIV	0.00	0.00	0.00	0.00	01178
HRS OVT CIV	0.00	0.00	0.00	0.00	DT-ESTB
HRS REG MIL	0.00	0.00	0.00	0.00	00275
HRS OVT MIL	0.00	0.00	0.00	0.00	
LBR REG CIV	0.00	0.00	0.00	0.00	
LBR OVT CIV	0.00	0.00	0.00	0.00	
LBR REG MIL	0.00	0.00	0.00	0.00	
LBR OVT MIL	0.00	0.00	0.00	0.00	
INDIRECT	0.00	0.00	0.00	0.00	
GAE	0.00	0.00	0.00	0.00	
OTHER COST	0.00	0.00	11,964.02	0.00	
MAT/SP/EQ	0.00	0.00	0.00	0.00	
RETURNS	0.00	0.00			
TOTAL	0.00	0.00	11,964.02	0.00	

PROD MTD YTD CTD 00 EST UNIT .00
AUTH QTY 0 AUTH FUND 100,000 AUTH HRS 00
PLAN QTY 0 COMPLETION .00 WIP 0.00
---F1=MENU---F2=CLEAR---F3=EXIT---F4=HELP---------------ENTER SELECTION==> ____
INQUIRY COMPLETE -- FOR NEXT INQUIRY ENTER NEW JO-PCN

~ 191.70 > IMPAC going
+ 21.00 this week
045
5077.70
100000
12471.72
87528.28

01-01

MILITARY INTERDEPARTMENTAL PURCHASE REQUEST PAGE 001

FSC	CONTROL SYMBOL NO.	DATE PREPARED	MIPR NUMBER	AMEND NO.
		23-SEP-2000	W16R0E02676635	000

TO: COMMANDER, SENECA ARMY DEPOT A
SIOSE-IR
5786 STATE ROUTE 96
ATTN: PETE DE LORK

ROMULUS ,NY 14541-5001

FROM: PPMD-MILITARY
CENAN-PP-M
26 FEDERAL PLAZA
ROOM 2119

NEW YORK NY 10278

ITEMS __ ARE __ ARE NOT INCLUDED IN THE INTERSERVICE SUPPLY SUPPORT PROGRAM AND REQUIRED INTERSERVICE SCREENING __ HAS __ HAS NOT BEEN ACCOMPLISHED.

ITEM NO.	DESCRIPTION (Federal stock number, nomenclature, specification and/or drawing No., etc.)	QTY	UNIT	ESTIMATED UNIT PRICE	ESTIMATED TOTAL PRICE
1	SUPPORT OF RAD SURVEY BRAC95 PROJECT AMSCO 61366S13 @ SENECA AD, NY.	0	LS	.00	$100,000.00

ACCOUNTING CLASSIFICATION 97 NA X 0510.40F1 E3 2000 08 8011 61366S13000 25EA KC73HC NA 19016
WORK CAT CODE: 72180 WORK CAT ELEM CODE: 99999
INITIAL ACCOUNTING CLASS 97 0510 40F1 08 61366S13000

FUNDS IN THE AMOUNT OF $100,000. ARE PROVIDED FOR SUPPORT OF BRAC95 PROJECT RAD SURVEY AMSCO 61366S13 AT SENECA AD, NY.

.

THE AMOUNT AUTHORIZED MAY NOT BE EXCEEDED WITHOUT PRIOR WRITTEN APPROVAL FROM CENAN.

.

THE ORIGINAL SOURCE OF FUNDS IS AS STATED IN ACCOUNTING CITATION.

.

SENECA POC IS PETER DELORK (609) 869-1380.

.

CENAN POCS CAN BE REACHED AT:
TOM ENROTH (607)869-1255, FAX (607) 869-1251.
JOHN DOWNING (212) 264-4059, FAX (212) 264-5785.

.

REQUEST THAT A COPY OF ACCEPTANCE OF THIS ORDER BE RETURN ATTN: CENAN-RM-B TO THE ADDRESS CITED IN THE "FROM" BLOCK.

.

PLEASE FAX A COPY OF ACCEPTANCE TO (212) 264-5785, ATTN: J. DOWNING.

CONTINUED ON THE NEXT PAGE

TI RADLE ϕϕ SϕII 5WERAD W3A1ϕ
ZGD ϕ561ϕϕϕ4ϕϕϕ8ϕϕϕ
7ϕ2 4ϕ 1411T

MILITARY INTERDEPARTMENTAL PURCHASE REQUEST PAGE 002

FSC	CONTROL SYMBOL NO.	DATE PREPARED	MIPR NUMBER	AMEND NO.
		23-SEP-2000	W16R0E02676635	000

TO: COMMANDER, SENECA ARMY DEPOT A
SIOSE-IR
5786 STATE ROUTE 96
ATTN: PETE DE LORK

ROMULUS ,NY 14541-5001

FROM: PPMD-MILITARY
CENAN-PP-M
26 FEDERAL PLAZA
ROOM 2119

NEW YORK NY 10278

ITEMS __ ARE __ ARE NOT INCLUDED IN THE INTERSERVICE SUPPLY SUPPORT PROGRAM AND REQUIRED INTERSERVICE SCREENING __ HAS __ HAS NOT BEEN ACCOMPLISHED.

ITEM NO.	DESCRIPTION (Federal stock number, nomenclature, specification and/or drawing No., etc.)	QTY	UNIT	ESTIMATED UNIT PRICE	ESTIMATED TOTAL PRICE

Please have the accepting official sign below and return to the FINANCIAL POC address. EXPIRATION DATE 30-DEC-2002

RA TECHNICAL POC: THOMAS R ENROTH CENAN-PP-M 607-869-1255
RA FINANCIAL POC: JOHNNY W DOWNING CENAN-PP-M 212-264-4059
RA FINANCIAL POC ADDRESS: PPMD-MILITARY
26 FEDERAL PLAZA
ROOM 2119

NEW YORK NY 10278

PA TECHNICAL POC: PETER DELORK (609) 869-1380
PA FINANCIAL POC:
ACCEPTED REIMBURSABLE ORDER William J Ryan DATE 29 SEP 2000 TITLE BUDGET OFFICER

SEE ATTACHED PAGES FOR DELIVERY SCHEDULES, PRESERVATION AND PACKAGING INSTRUCTIONS, SHIPPING INSTRUCTIONS AND INSTRUCTIONS FOR DISTRIBUTION OF CONTRACTS AND RELATED DOCUMENTS.

GRAND TOTAL
$100,000.00

TRANSPORTATION ALLOTMENT (Used if FOB Contractor's plant)

MAIL INVOICES TO (Payment will be made by)
USACE FINANCE CENTER
E3 - NEW YORK DISTRICT
5720 INTEGIRTY DRIVE

MILLINGTON TN 38054-5005

FUNDS FOR PROCUREMENT ARE PROPERLY CHARGEABLE TO THE ALLOTMENTS SET FORTH ABOVE, THE AVAILABLE BALANCES OF WHICH ARE SUFFICIENT TO COVERTHE ESTIMATED TOTAL PRICE.

ELECTRONICALLY SIGNED BY
JANNIE BUTLER
OPERATING ACCOUNTANT 25-SEP-2000

AUTHORIZING OFFICER
JOHNNY W DOWNING
PROGRAM ANALYST

ELECTRONICALLY SIGNED BY
JOHNNY W DOWNING

DATE
23-SEP-2000

DD FORM 448

ACCEPTANCE OF MIPR

1. TO *(Requiring Activity Address)(Include ZIP Code)*	2. MIPR NUMBER	3. AMENDMENT NO.
PPMD, Military, CENAN-PP-M 26 Federal Plaza, Room 2119 New York, New York 10278-0090	W16ROE2676635	Amend 2
	4. DATE *(MIPR Signature Date)*: 23 Sep 00	5. AMOUNT *(As Listed on the MIPR)*: $100,000.00

6. The MIPR identified above is accepted and the items requested will be provided as follows: *(Check as Applicable)*

a. ☐ ALL ITEMS WILL BE PROVIDED THROUGH REIMBURSEMENT *(Category I)*

b. ☐ ALL ITEMS WILL BE PROCURED BY THE DIRECT CITATION OF FUNDS *(Category II)*

c. ☐ ITEMS WILL BE PROVIDED BY BOTH CATEGORY I AND CATEGORY II AS INDICATED BELOW

d. ☐ THIS ACCEPTANCE, FOR CATEGORY I ITEMS, IS QUALIFIED BECAUSE OF ANTICIPATED CONTINGENCIES AS TO FINAL PRICE. CHANGES IN THIS ACCEPTANCE FIGURE WILL BE FURNISHED PERIODICALLY UPON DETERMINATION OF DEFINITIZED PRICES, BUT PRIOR TO SUBMISSION OF BILLINGS.

7. ☐ MIPR ITEM NUMBER(S) IDENTIFIED IN BLOCK 13, "REMARKS" IS NOT ACCEPTED (IS REJECTED) FOR THE REASONS INDICATED.

8. TO BE PROVIDED THROUGH REIMBURSEMENT CATEGORY I			9. TO BE PROCURED BY DIRECT CITATION OF FUNDS CATEGORY II		
ITEM NO. a.	QUANTITY b.	ESTIMATED PRICE c.	ITEM NO. a.	QUANTITY b.	ESTIMATED PRICE c.
1		$294.72			
d. TOTAL ESTIMATED PRICE		$294.72	e. TOTAL ESTIMATED PRICE		

10. ANTICIPATED DATE OF OBLIGATION FOR CATEGORY II ITEMS

11. GRAND TOTAL ESTIMATED PRICE OF ALL ITEMS: $12,471.72

12. FUNDS DATA *(Check if Applicable)*

a. [X] ADDITIONAL FUNDS IN THE AMOUNT OF $ 294.72 ARE REQUIRED *(See justification in Block 13)*

b. ☐ FUNDS IN THE AMOUNT OF $ _____ ARE NOT REQUIRED AND MAY BE WITHDRAWN

13. REMARKS

Correction see block 11.

14. ACCEPTING ACTIVITY *(Complete Address)*	15. TYPED NAME AND TITLE OF AUTHORIZED OFFICIAL	
Commander's Representative, Seneca Army Depot Activity 5786 Rt 96, Romulus, NY 14541-5001	STEPHEN M. ABSOLOM, Commander's Representative	
	16. SIGNATURE: Stephen M Absolom	17. DATE: 08/03/01

DD FORM 448-2, JUL 71 (EG) PREVIOUS EDITION WILL BE USED UNTIL EXHAUSTED.

Enroth, Thomas R NAN02

From: Jacqueline Travers [Jacqueline.Travers@parsons.com]
Sent: Tuesday, March 26, 2002 9:15 AM
To: Tom Enroth (E-mail); Steve Absolom (E-mail); Marshall Greene (E-mail); Kevin Healy (E-mail); John Cleary (E-mail)
Cc: Todd Heino; Kathleen Kadlubak
Subject: NRC and SEAD-48 proposals

To all:

We heard from Kevin that the negotiations for the NRC and SEAD-48 field efforts would be postponed until NRC approves the License Termination Plan (LTP). I just wanted to provide you with the schedule information for the two field efforts that I promised during last week's conference call and discuss if it really is necessary to postpone the field work until NRC approval.

First, the NRC field work will take approximately 16 weeks to complete with 2 field crews (this assumes Bldg 356 and 612 are removed from scope). SEAD-48 field work will take about 20 weeks to complete with one crew.

If we can get in the field by May 1, the NRC field work can be completed by Labor Day and the SEAD-48 work the month after. This would allow sufficient time to process data and get a draft report out to agencies by the end of the year.

In order to begin by May 1, we need to get these DOs negotiated in the next couple of weeks. LTP - yes 48 - no

Now, I believe the only major outstanding issue as far is NRCs review is concerned is the DCGL derivation. If these values change, this will not effect how the field work is executed. So I'm not sure that waiting for their approval of the plan will have any effect on the field work. Actually, it could hurt the effort, since the last we heard back in January was that their review could take 90 - 180 days.

Last Tuesday, I raised some concerns in an email to John, Tom and Kevin about the scope in the LTP. However, these issues are more interpretation issues and need to be resolved between the Army, ANL and Parsons. I don't think anyone is expecting any comments from NRC on these issues.

Lastly, I do recognize that EPA and NYSDEC comments on the SEAD-48 workplan may have more of an effect on the field effort at SEAD-48. However, comments on this plan are due from them on April 1 and we should know then, how far off we are from what they are expecting. We could hopefully make any changes to the scope for the proposal fairly quickly, negotiate, and get started by May.

I will bring this up on the call this morning at 10 and we can discuss further.

Thanks,

Jackie.

Jacqueline Travers
Associate

Parsons

Enroth, Thomas R NAN02

From: Healy, Kevin W HNC
Sent: Tuesday, March 19, 2002 2:21 PM
To: 'Jacqueline Travers'; John Cleary (E-mail); Healy, Kevin W HNC; Enroth, Thomas R NAN02
Cc: Todd Heino
Subject: RE: NRC Cost Proposal/Work plan

Tom/John,
I will leave it up to you both to tell us if these "extras" are needed. If they are, we will include them in during negotiations...assuming they are of not too extensive a cost.

-----Original Message-----
From: Jacqueline Travers [mailto:Jacqueline.Travers@parsons.com]
Sent: Tuesday, March 19, 2002 11:27 AM
To: John Cleary (E-mail); Kevin Healy (E-mail); Tom Enroth (E-mail)
Cc: Todd Heino
Subject: NRC Cost Proposal/Work plan

Bldg 612 remove? while 356
no statistical analysis done on 612 yet - work was done

In preparing the NRC Work Plan, I wanted to just clarify a few issues.

The NRC work plan is being prepared based on ANL's license termination plan (LTP). There are a few things in reviewing the plan that I wanted to clarify since they effect how we proposed on the work.

1. There are several somewhat vague references to outdoor surveys in the ANL LTP. In Section 5.6.3.2, the LTP states that "The grounds and major buildings and areas outside the entraceways to the storage bunkers will be included in the investigations. Land areas will initially be investigated by taking in situ gamm measurements in selected locations". Although we have incorporated some budget for in situ gamma measurements, we have assumed that the surveys are indoor only - no outdoor surveys are included. We did not propose to take one insitu gamma measurement per igloo. This would be over 100 URSA measurements. I believe we have budgeted a dozen or so. It is not clear that ANL proposed one per igloo, but I just wanted to let you know we did not budget it this way. We also did not plan on outdoor surveys around the buildings (other than the 2 igloos included in the LTP at SEAD-48).

count time

what instrument
% for QA/QC to Redstone?

2. The LTP workplan proposes that smears will be counted in the field. This was not done at SEAD-12 and we did not propose to do this in our proposal. We assumed smears would be sent to Redstone as was done before. Therefore, no analytical for smears is included in our proposal.

who pays for this

3. Lastly, and this may be minor, but the LTP says that a QAPP will be prepared. We have not budgeted to write a separate QAPP, but we will have SOPs, etc. in the workplan that we have been funded to prepare. It just isn't a separate document.

Quality Assurance Project Plan

I just wanted to bring this to your attention at this point before negotiations have begun in case we have misinterpreted the scope of work.

Please give me a call if you have any questions.

Thanks,

Jackie.

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@anl.gov]
Sent: Thursday, March 21, 2002 3:32 PM
To: 'John Cleary'; Kamboj, Sunita; Sydelko, Thomas G.
Cc: Tomas Enroth (E-mail); Jacqueline Travers (E-mail)
Subject: RE: [Fwd: NRC Cost Proposal/Work plan]

John,

Regarding the URSA, the proposed limited use (a dozen or so measurements) of this device is puzzling, especially after all the effort to gain its approval. It seems hardly worth the trouble to mobilize for this few readings. Moreover, the whole point of in situ gamma measurements, and other field techniques, is that a relatively large number of low cost and perhaps lower (than lab) quality measurements does an overall better job of characterization than traditional discrete sampling and lab analysis.

The LTP anticipated the use of a gross counting device, such as a FIDLER or a 2x2 NaI for soil surveys, with further investigation of any hits by some other means, such as a lab sample (could be the URSA in this case). The FIDLER (or 2x2) measurements would be taken in the most likely contaminated places first, e.g., entranceways, or outside drainages. Further readings would only be taken if these produced hits (a dozen hits would be more than expected for all the bunkers).

Regarding smears, see my earlier e-mail. One way to reduce the number of lab analyses of smears needed might be to screen smears in field.

Regarding a QAPP, all field work has to be done under a QAPP, but a separate QAPP does not have to be written. Presumably, Parsons has a standing QAPP for the earlier surveys performed. If this does not cover all aspects of the LTP work, e.g., use of the URSA, it could be appended.

-Kurt

-----Original Message-----
From: John Cleary [mailto:clearyj@seneca-hp.army.mil]
Sent: Tuesday, March 19, 2002 12:00 PM
To: Kamboj, Sunita; Picel, Kurt C.; Sydelko, Thomas G.
Subject: [Fwd: NRC Cost Proposal/Work plan]

Sunita/Tom/Kurt,
Your thoughts?
I think that 12 of these outdoor igloos should be fine.
I fully planned for the smears to be analyzed by our US Army lab at Redstone Arsenal.
What about the QAPP?

John

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@ANL.GOV]
Sent: Thursday, March 21, 2002 1:05 PM
To: 'John Cleary'
Cc: Tomas Enroth (E-mail); Jacqueline Travers (E-mail); Kamboj, Sunita; Sydelko, Thomas G.
Subject: RE: Help !!

John,

In the LTP, Sec 5.5, the blanket statement is made that smears will be taken at the same location as direct measurements. While this indicates the location of smears, it could also imply that smears will be taken at *every* location a direct reading is taken. Further, Sec 5.5.3.1 of MARSSIM, under "Class 3 Areas," recommends that measurement of total AND removable contamination be taken at both biased and random locations. The BRAC policy letter does not specify the types of measurements to be taken, only the total number and the means for selecting locations.

Given the commitments in the LTP and the MARRSIM recommendation, we would be collecting smears along with direct measurements at each of 30 random locations in the storage bunkers and other Class 3 survey units in buildings. That would amount to 121 bunkers plus 7 class 3 survey units in buildings for a total of 128 Class 3 survey units. If 30 smears are taken in each, the total comes to 3840 smears for class 3 survey units. For the 21 class 2 survey units identified in the LTP, which are smaller in size, we commit to 10 samples per unit, or a total of 210, making a grand total of 4050 dry smears.

This number should be viewed as a maximum, however, with reductions possible based on cost effectiveness. Much of the call for smears in class 3 buildings is on a "nice to have" or "convenient to take while you're in the field" basis. On a technical basis, however, smears would not be needed where direct measuments were negative, assuming direct measurement MDCs were adequate. (What is your experience on this question?) So, to clarify the LTP and our position regarding smears, the Work Plan for the surveys should define specific criteria for taking smears.

With respect to wet smears for liquid scintillation counting of tritium, the LTP identifies four special weapons bunkers where tritium is a potential concern (A0201, A0316, A0317, and A0508). Assuming 30 smears for each bunker, this comes to a total of 120 wet smears. Again, this would be a maximum number. In this case, however, we would have to check if direct measurements would be effective for tritium. It may also be possible to remove tritium as a potential concern through a further review of process knowledge/facility history in these bunkers.

Regards,

Kurt

-----Original Message-----
From: John Cleary [mailto:clearyj@seneca-hp.army.mil]
Sent: Thursday, March 21, 2002 7:12 AM
To: Kamboj, Sunita; Picel, Kurt C.
Subject: Help !!

Y'All,
I need a "ballbark" figure of the number of dry smears and liquid scint samples that the surveys for the LTP will generate. I need that info to provide to US Army Dosimetry Lab in AL so that they can give me a cost estimate for processing those samples.
Your assistance is appreciated. I need this, as usual, ASAP.
John

81-401-2535 (tel)
781-401-2575 (fax)
jacqueline.travers@parsons.com

Wed - 3:30
Th - afternoon

NOTES/COMMENTS:

LTP - survey ARMY / ACC / PARSONS

(1) Parsons to pay Redstone Arsenal directly for services (swipes)

(2) Removal of Bldg 356 & 612 from scope (609 will still need analysis of data)

(3) dry smears - max 4/SC

(4) wet smears - max 120

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@ANL.GOV]
Sent: Thursday, March 21, 2002 1:05 PM
To: 'John Cleary'
Cc: Tomas Enroth (E-mail); Jacqueline Travers (E-mail); Kamboj, Sunita; Sydelko, Thomas G.
Subject: RE: Help !!

John,

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Regards,

Enroth, Thomas R NAN02

From: Picel, Kurt C. [kcpicel@anl.gov]
Sent: Thursday, March 21, 2002 3:32 PM
To: 'John Cleary'; Kamboj, Sunita; Sydelko, Thomas G.
Cc: Tomas Enroth (E-mail); Jacqueline Travers (E-mail)
Subject: RE: [Fwd: NRC Cost Proposal/Work plan]

John,

Regarding the URSA, the proposed limited use (a dozen or so measurements) of this device is puzzling, especially after all the effort to gain its approval. It seems hardly worth the trouble to mobilize for this few readings. Moreover, the whole point of in situ gamma measurements, and other field techniques, is that a relatively large number of low cost and perhaps lower (than lab) quality measurements does an overall better job of characterization than traditional discrete sampling and lab analysis.

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-Kurt

-----Original Message-----
From: John Cleary [mailto:clearyj@seneca-hp.army.mil]
Sent: Tuesday, March 19, 2002 12:00 PM
To: Kamboj, Sunita; Picel, Kurt C.; Sydelko, Thomas G.
Subject: [Fwd: NRC Cost Proposal/Work plan]

Sunita/Tom/Kurt,
Your thoughts?
I think that 12 of these outdoor igloos should be fine.
I fully planned for the smears to be analyzed by our US Army lab at Redstone Arsenal.
What about the QAPP?

John

Kurt

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Sent: Thursday, March 21, 2002 7:12 AM
To: Kamboj, Sunita; Picel, Kurt C.
Subject: Help !!

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Your assistance is appreciated. I need this, as usual, ASAP.
John

Enroth, Thomas R NAN02

From: Jacqueline Travers [Jacqueline.Travers@parsons.com]
Sent: Tuesday, March 26, 2002 9:15 AM
To: Tom Enroth (E-mail); Steve Absolom (E-mail); Marshall Greene (E-mail); Kevin Healy (E-mail); John Cleary (E-mail)
Cc: Todd Heino; Kathleen Kadlubak
Subject: NRC and SEAD-48 proposals

To all:

We heard from Kevin that the negotiations for the NRC and SEAD-48 field efforts would be postponed until NRC approves the License Termination Plan (LTP). I just wanted to provide you with the schedule information for the two field efforts that I promised during last week's conference call and discuss if it really is necessary to postpone the field work until NRC approval.

First, the NRC field work will take approximately 16 weeks to complete with 2 field crews (this assumes Bldg 356 and 612 are removed from scope). SEAD-48 field work will take about 20 weeks to complete with one crew.

If we can get in the field by May 1, the NRC field work can be completed by Labor Day and the SEAD-48 work the month after. This would allow sufficient time to process data and get a draft report out to agencies by the end of the year.

In order to begin by May 1, we need to get these DOs negotiated in the next couple of weeks.

Now, I believe the only major outstanding issue as far is NRCs review is concerned is the DCGL derivation. If these values change, this will not effect how the field work is executed. So I'm not sure that waiting for their approval of the plan will have any effect on the field work. Actually, it could hurt the effort, since the last we heard back in January was that their review could take 90 - 180 days.

Last Tuesday, I raised some concerns in an email to John, Tom and Kevin about the scope in the LTP. However, these issues are more interpretation issues and need to be resolved between the Army, ANL and Parsons. I don't think anyone is expecting any comments from NRC on these issues.

Lastly, I do recognize that EPA and NYSDEC comments on the SEAD-48 workplan may have more of an effect on the field effort at SEAD-48. However, comments on this plan are due from them on April 1 and we should know then, how far off we are from what they are expecting. We could hopefully make any changes to the scope for the proposal fairly quickly, negotiate, and get started by May.

I will bring this up on the call this morning at 10 and we can discuss further.

Thanks,

Jackie.

Jacqueline Travers
Associate

Parsons

APPENDIX A
ANNEX ?
RAD SURVEYS:
PERFORMANCE OF FINAL STATUS SURVEYS
AT THE RADIOLOGICAL SURVEY SITES,
SENECA ARMY DEPOT ACTIVITY, ROMULUS, NEW YORK

1.0 GENERAL STATEMENT OF SERVICES

1.1 Background.

1.1.1 General. As part of its continuing program of evaluating its hazardous waste management practices, the Army is performing remedial activities at Seneca Army Depot Activity (SEDA). A Final Status Survey and License Termination Report is required at several sites prior to closure and termination of SEDA's Nuclear Regulatory Commission (NRC) license. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), is contracting for the required work.

1.1.2 Site Description. NRC license-related activities occurred in 6 buildings and 121 ammunition storage igloos as listed in Table 1.

1.2 Location. SEDA is a US Army facility located in Seneca County, New York. SEDA occupies approximately 10,600 acres. It is bounded on the west by State Route 96A and on the east by State Route 96. The cities of Geneva and Rochester are located to the northwest (14 and 50 miles, respectively); Syracuse is 53 miles to the northeast and Ithaca is 31 miles to the south. The surrounding area is generally used for farming.

1.3 Regulatory Status. SEDA was included on the Federal Facilities National Priorities List on 13 July 1989. Consequently, all work to be performed under this contract shall be performed according to CERCLA guidance and the Federal Facilities Agreement in effect for Seneca Army Depot (Reference 12.2). Additionally, all work shall be performed in conformance with Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) requirements.

1.4 Basis of this Investigation. The RI/FS Work Plan prepared by Parsons Engineering Science, Inc., for the Radiological Waste Sites RI (References 12.3 and 12.4), the License Termination Plan prepared by Argonne National Labs, the Work Plan prepared and approved as part of this Task Order and MARSSIM guidance will be the basis under which the survey activities under this Statement of Work (SOW) will be carried out.

2.0 OBJECTIVE

The objective of this Statement of Work is to plan and perform a Final Status Survey at the facilities listed in Table 1 as defined by MARSSIM guidance. Additionally, a Final Status Survey and a License Termination Report shall be completed to support license termination efforts. Included in the license termination effort shall be the SEAD-12 and Pitchblende Storage Igloo site investigation results.

3.0 DETAILED DESCRIPTION OF SERVICES

3.1 General Requirements. All work performed by the A-E shall be designed and implemented in a manner which complements earlier investigations and shall conform to this SOW, the approved Work Plans and the requirements of EPA, NYSDEC, NRC and SEDA. In the event that any conflicts arise, it will be the USAESCH Project Manager's responsibility to assure resolution. All work shall be performed under the general supervision of a Professional Engineer registered in the State of New York.

TABLE 1

LIST OF BUILDINGS/STRUCTURES WHERE NRC LICENSE-RELATED ACTIVITIES OCCURRED

BUILDINGS	BLD 612	BLD 5	BLD 306	BLD S-2084	BLD 2073	WAREHOUSE 356		Bldg 612	
IGLOOS	A0201	B0109	C0203	D0104	E0103				
	A0316	B0411	C0303	D0105	E0105				
	A0317	B0501	C0307	D0107	E0112				
	A0508	B0602	C0308	D0108	E0211				
	A0701 (b)	B0603	C0401	D0110	E0301				
	A0706	B0609	C0403	D0113	E0302				
	A0707	B0610	C0405	D0206	E0303				
	A0710	B0701	C0406	D0207	E0312				
	A0711	B0705	C0407	D0305	E0402				
	A0901	B0707	C0408	D0306	E0410				
	A0905	B0708	C0501	D0312	E0411				
	A1108	B0709	C0503	D0401	E0413				
	A1109	B0711	C0504	D0406	E0504				
		B0801	C0505	D0407	E0506				
		B0802	C0508	D0413	E0508				
		B0804	C0510	D0601	E0510				
		B0809	C0511	D0604	E0512				
		B0810	C0513	D0607	E0602				
		B0811	C0603	D0704	E0604				
		B0909	C0604	D0705	E0609				
			C0605	D0711	E0610				
			C0606	D0712	E0702				
			C0608	D0801	E0706				
			C0701	D0805	E0711				
			C0706		E0801				
			C0707		E0802				
			C0708						
			C0801						
			C0803						
			C0807						
			C0809						
			C0901						
			C0902						
			C0906						
			C0907						
			C0908						
			C0909						
			C0912 ©						

(a) Except as otherwise indicated, bunkers were used for storage of packaged DU ammunition under SUC-1275.

(b) A0701 was used for storage of light anti tank rockets containing promethium-147 under BML 12-00722-07

(c) Bunker C0912 is a control bunker to establish radiological background levels.

3.2 (Task 1) Site Visit and Historical Records Review . The A-E shall visit the affected sites for the purpose of gaining familiarity with the physical characteristics of each. Additionally, the A-E shall review pertinent records and prior investigations as provided to determine the extent of previous work and plan the additional work required to close out this site according to MARSSIM. Most importantly, the A-E shall use the initial Work Plan prepared by Argonne National Labs as a basis for the work to be performed under this Task Order.

3.3 (Task 2) Preparation of a Final Status Survey Work Plan . The A-E shall prepare a Work Plan (Draft, Draft-Final and Final) which completely lays out the sampling and analysis required to perform the Final Status Survey at the subject sites. The Work Plan shall include historical data and analysis thereof so as to provide the complete rationale for the sampling proposed. Drawing on the classification work performed so far by Argonne National Labs, the A-E shall lay out the process and steps required to achieve complete closure of the site according to MARSSIM so that the regulators can see the process envisioned and provide input.

3.4 (Task 3) Final Status Survey Field Investigations . The A-E shall provide the personnel and equipment required to perform the field investigations laid out in the Final Status Survey Work Plan.

3.5 (Task 4) Final Status Survey Report . Based upon the results of work performed, the A-E shall prepare a Final Status Survey report. The report shall contain the following:

- *a recapitulation of the work performed,*
- *presentations of the data gathered,*
- *analysis of the data and conclusions,*
- *recommendations on disposition of these sites with respect to NRC license requirements*

All files developed shall be available in a .pdf format. All maps developed shall be available electronically.

3.6 (Task 5) Preparation of License Termination Report . The A-E shall prepare a License Termination Report which presents a complete summation of the background of the sites, the classification and sampling efforts performed and the results and conclusions of the overall effort. All files developed shall be available in a .pdf format. All maps developed shall be available electronically. As part of this License Termination Report, the A-E shall include all sampling, analysis and results from the SEAD-12 and Pitchblende Storage Igloo Sites (SEAD-48)(Igloos E-803 through E-811) for review by the NRC. This will allow a one time review and disposition of all sites on the installation where radiological contamination may have been a concern.

3.7 (Task 6) Post FSS Support . Following approval of the FSS report by the regulators, the A-E shall be responsible for the preparation of the Proposed Remedial Action Plan (PRAP) and the Record of Decision (ROD). Both documents shall be prepared in accordance with the existing EPA guidance documents. This task shall not involve the SEAD-12 and SEAD-48 sites since each will be closed out with NYSDEC and the EPA as part of the CERCLA process.

3.8 (Task 7) Project Management . The A-E shall, during the life of this Task Order (TO), manage the TO in accordance with Appendix A of the basic contract SOW. The A-E shall perform all project management associated with this TO as a part of this task including, but not limited to, preparing and submitting a master network schedule, cost and manpower plan, monthly progress reports, monthly individual performance report and cost/schedule variance report, work task proposals and a program plan in accordance with Section 4.5 of Appendix A to the basic contract SOW.

4.0 SUBMITTALS AND PRESENTATIONS

4.1 Format and Content. All reports shall present data, analyses, and recommendations and shall be prepared in accordance with the suggested Format as presented in the RI/FS Guidance Manual. All drawings shall be of engineering quality in drafted form with sufficient details to show interrelations of major features on the installation site map. When drawings are required, data may be combined to reduce the number of drawings. The report shall consist of 8-½ x 11" pages with drawings folded, if necessary, to this size. A decimal paragraphing system shall be used, with each section and paragraph of the reports having a unique decimal designation. The report covers shall consist of vinyl 3-ring binders and shall hold pages firmly while allowing easy removal, addition, or replacement of pages. A report title page shall identify the A-E, the USAESCH, and the date. The A-E identification shall not dominate the title page. Each page of draft and draft-final reports shall be stamped "DRAFT" and "DRAFT-FINAL", respectively. Each report shall identify the members and title of the A-E's staff which had significant, specific input into the report's preparation or review. Submittals shall include incorporation of all previous review comments accepted by the A-E as well as a section describing the disposition of each comment. Disposition of comments submitted with the final report shall be separate from the report document. All final submittals shall be sealed by the registered Professional Engineer-In-Charge.

4.2 Presentations. The A-E shall make presentations of work performed according to the schedule in paragraph 4.6. Each presentation shall consist of a summary of the work accomplished and anticipated followed by an open discussion among those present. The A-E shall provide a minimum of two persons at the meetings which are expected to last one day each.

4.3 Conference Minutes. The A-E shall be responsible for taking notes and preparing the minutes of all conferences, presentations, and review meetings. Conference notes shall be prepared in typed form and the original furnished to the Contracting Officer (within five (5) working days after date of conference) for concurrence and inclusion in the next monthly report. This report shall include the following items as a minimum:

a. The date and place the conference was held with a list of attendees. The roster of attendees shall include name, organization, and telephone number;

b. Written comments presented by attendees shall be attached to each report with the conference action noted. Conference action as determined by the Government's Project Manager shall be "A" for an approved comment, "D" for a disapproved comment, "W" for a comment that has been withdrawn, and "E" for a comment that has an exception noted;

c. Comments made during the conference and decisions affecting criteria changes must be recorded in the basic conference notes. Any augmentation of written comments should be documented by the conference notes.

4.4 Confirmation Notices. The A-E shall be required to provide a record of all discussions, verbal directions, telephone conversations, etc., participated in by the A-E and/or representatives on matters relative to this contract and the work. These records, entitled "Confirmation Notices", shall be numbered sequentially and shall fully identify participating personnel, subject discussed, and any conclusions reached. The A-E shall forward to the Contracting Officer as soon as possible (not more than five (5) work days), a reproducible copy of said confirmation notices. Distribution of said confirmation notices shall be made by the Government.

4.5 Progress Reports and Charts. The A-E shall submit progress reports to the Contracting Officer with each request for payment. The progress reports

shall indicate work performed and problems incurred during the payment period. Upon award of this delivery order, the A-E shall, within 15 days, prepare a progress chart to show the proposed schedule for completion of the project. The progress chart shall be prepared in reproducible form and submitted to the Contracting Officer for approval. The actual progress shall be updated and submitted by the 15th of each month and may be included with the request for payment.

4.6 Proposed Schedule. The proposed schedule for the Final Status Survey is given below. All work and services under Appendix A, Annex ?, shall be completed by 31 December 2003.

Milestone	Date
Assumed Notice To Proceed	18 Jan 02
Draft FSS Work Plan	08 Feb 02
Comments to A-E	22 Feb 02
Draft-Final FSS Work Plan	01 Mar 02
Comments to A-E	15 Mar 02
Final FSS Work Plan	31 Mar 02
Initiation of Field Work	30 Apr 02
Completion of Field Work	30 Sep 02
~~Draft FSS Report~~ DRAFT NCR Closeout Report	30 Oct 02
~~Comments to A-E~~	15 Nov 02
~~Draft-Final FSS Report~~	29 Nov 02
Comments to A-E	10 Dec 02
Final FSS (Assumes No Disputes)	05 Jan 03
Public Comment Period	TBD
Meetings/Presentations	TBD

4.7 Submittals.

4.7.1 General Submittal Requirements .

4.7.1.1 Distribution . The A-E is responsible for reproduction and distribution of all documents. The A-E shall furnish copies of submittals to each addressee listed in paragraph 4.7.2 in the quantities listed in the document submittal list. Submittals are due at each of the addresses not later than the close of business on the dates shown in paragraph 4.6.

4.7.1.2 Partial Submittals. Partial submittals will not be accepted unless prior approval is given.

4.7.1.3 Cover Letters . A cover letter shall accompany each document and indicate the project, project phase, the date comments are due, to whom comments are submitted, the date and location of the review conference, etc., as appropriate. (Note that, depending on the recipient, not all letters shall contain the same information.) The contents of the cover letters should be coordinated with CEHNC-OE-DC prior to the submittal date. The cover letter shall not be bound into the document.

4.7.1.4 Supporting Data and Calculations. The tabulation of criteria, data, circulations, etc., which are performed but not included in detail in the report shall be assembled as appendices. Criteria information provided by CEHNC need not be reiterated, although it should be referenced as appropriate. Persons performing and checking calculations are required to place their full names on the first sheet of all supporting calculations, etc., and initial the following sheets. These may not be the same individual. Each sheet should be dated. A copy of this statement of work shall be included as Appendix A in the Draft RI/FS report only.

4.7.1.5 Reproducibles. One camera-ready, unbound copy of each submittal shall be provided to the Contracting Officer in addition to the submittals required in the document and submittal list.

4.7.2 Addresses.

Commander
U.S. Army Engineering and Support
Center, Huntsville
ATTN: CEHNC-OE-DC(Mr. Greene
4820 University Square
Huntsville, AL 35816

Commander's Representative
Seneca ADA
ATTN: SMASE-CO (Bld.123, Mr. Absolom)
P.O. Box 9, 5786 State Route 96
Romulus, New York, 14541-5001

Commander
USACHPPM (PROV)
ATTN: MCHB-ME-R (Mr. Hoddinott)
Building E1677
Aberdeen Proving Ground, MD
21010-5422

Commander
US Army Engineer District, New York
Seneca Office for Project Management
ATTN: Mr. Tom Enroth, Bld.125
P.O. Box 9, 5786 State Route 96
Romulus, New York, 14541-5001

Commander
U.S. Army Environmental Center,
ATTN: Mr. Clayton Kim
Aberdeen Proving Ground, MD
21010-5422

4.7.3 Document and Submittal List

	Work Plans and Final Report		
	Draft	Draft-Final	Final
CEHNC-OE-DC	2	2	2
SMASE-CO	2	8	8
AEC	1	1	1
CENAN	2	3	3
USACHPPM	2	2	2
TOTAL	9	9	9

5.0 SAFETY REQUIREMENTS

5.1 Site activities in conjunction with this project may pose unique safety, chemical, and/or radiological exposure hazards which require specialized expertise to effectively address and eliminate. The A-E shall conduct the RI/FS activities according to the requirements presented in the Workplan.

5.2 Prior to commencement of RI/FS field activities, the A-E shall submit for review an amendment to the Workplan SHERP which is to contain the following:

5.2.1 A discussion of the A-E's organization structure, to include lines of authority of the A-E and all subcontractors, shall be provided along with an organization chart showing the lines of authority for safety and health from site level to corporate management. Each person assigned specific safety and health responsibilities shall be identified and pertinent qualifications and experience shall be described.

5.2.2 Documentation of compliance with training and medical surveillance requirements for affected employees shall be provided. A format for such documentation is provided in the Workplan SHERP.

6.0 QUALITY ASSURANCE PROJECT PLAN REQUIREMENTS

The A-E shall perform all sampling and analysis activities according to the requirements presented in the Work Plan.

7.0 SOIL BORING AND MONITORING WELL REQUIREMENTS

All ~~drilling, installation and~~ sampling activities shall be performed according to the requirements presented in the Work Plan.

8.0 SURVEY REQUIREMENTS

All surveying shall be completed according to the requirements presented in the Work Plan.

9.0 REFERENCES

GENERAL

9.1 Interim Final, "Guidance for or Conducting Remedial Investigations/Feasibility studies Under CERCLA", U.S. EPA, Office of Solid Waste and Emergency Response, October 1988.

9.2 "Federal Facility Agreement under CERCLA Section 120 in the matter of Seneca Army Depot, Romulus, New York", Docket No. II-CERCLA-FFA-00202, USEPA, U.S. Department of the Army, and the New York State Department of Environmental Conservation, November 1990.

9.3 Preliminary-Draft, " Generic Work Plan for RI/FS" , Engineering Science, Inc., January 1995.

SPECIFIC

9.4 Preliminary-Draft, " Project Scoping Plan for Performing a CERCLA Remedial Investigation/Feasibility Study (RI/FS) at the Pitchblende Storage Igloos, Seneca Army Depot Activity.", Engineering Science, Inc., August, 1995.