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

02 MAY 1988

Docket No. 040-08526 License No. SUC-1275

Department of the Army
ATTN: Colonel William R. Holmes
Commander, Seneca Army Depot
SDSSE-AX
Romulus, New York 14541-5001

Gentlemen:

Subject: Closeout Inspection No. 87-002

This refers to the closeout safety inspection conducted by Ms. E. Ullrich and Mr. R. Ladun of this office on October 29, 1987 at the Seneca Army Depot of activities authorized by the above listed NRC license. Areas examined during this closeout inspection are described in the Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of observations by the inspectors, interviews with personnel, selective examination of representative records, and independent measurements by the inspectors. The findings of the inspection were discussed with yourself at the conclusion of the inspection. A copy of the NRC inspection report is enclosed.

Within the scope of this inspection, no violations were identified.

Based on the results of this inspection, we have no objection to the release of Bunkers E0801-30811 for unrestricted use.

In accordance with Section 2.790 of the NRC's "Rules of Practice", Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosure will be placed in the Public Document Room. No reply to this letter is required.

Your cooperation with us is appreciated.

Sincerely,

John D. Kinneman, Chief
Nuclear Materials Safety Section B
Division of Radiation Safety
and Safeguards

Enclosure: NRC Region I Inspection Report No. 87-002

cc:
Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
State of New York
T. Stincic, Radiation Safety Officer

Department of the Army
Headquarters, Material Command
ATTN: Darwin N. Taras
Chief Safety Office
5001 Eisenhower Avenue
Alexandria, Virginia 223330001

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 040-08526/87-002

Docket No. 040-08526

License No. SUC-1275 Priority 3 Category E

Licensee: U.S. Department of the Army

Facility Name: Seneca Army Depot

Inspection At: Romulus, New York

Inspection Conducted: October 29, 1987

Inspectors: Elizabeth Ullrich 4/25/88
Elizabeth Ullrich, Health Physicist — date signed

Richard H. Ladun 4-28-88
Richard Ladun, Health Physicist — date signed

Approved by: John D. Kinneman 4/28/88
John D. Kinneman, Chief — date signed
Nuclear Materials Safety Section A

Inspection Summary: Closeout inspection on October 29, 1987 (Inspection No. 040-08526/87-002).

Areas Inspected: Announced, closeout inspection limited to a survey of Bunkers E0801-E0811 for residual contamination prior to release of the facilities for unrestricted use. Twenty-seven wipes were taken and assayed for removable alpha and beta activity. Specified areas of the facility were surveyed to identify fixed radioactive contamination. Two soil samples and a water sample were analyzed for gamma activity.

Results: No violations were identified. No detectable removable radioactive contamination was found. No radiation levels above background were found. No levels of activity above naturally occurring environmental concentrations were detected. The licensee's survey report enclosed with their letter dated May 26, 1987 accurately reflects the condition of the portions of the facilities surveyed.

DETAILS

1. Persons Contacted

*Thomas Stincic, Radiation Protection Officer
*Thomas Battaglia, Safety Director
*Col. William R. Holmes, Commander

*denotes those present at the exit interview.

2. Background

Seneca Army Depot covers approximately 10,000 acres, a large portion of which is occupied by munitions bunkers. Eleven of these bunkers were used in the 1940's to store approximately 2000 barrels of pitchblende ore. After removal of the ore, normal storage of munitions was resumed.

Radioactive contamination in the vicinity of the eleven bunkers was identified in 1976 by ERDA, as part of the "Formerly Utilized MED/AEC Sites Remedial Action Program". The Seneca Safety Office coordinated the decontamination of the bunkers in July 1985. The U.S. Army Radiation Control Team (RADCON) performed the initial assessment and on-site health physics assistance during decontamination. Soil analysis and other health physics support were provided by the U.S. Army Belvoir Research and Development Center. Whole-body counting for workers was done at Bethesda Naval Hospital by Uniformed Services University of Health Sciences (USUHS). The U.S. Army Environmental Hygiene Agency (AEHA) provided a close-out survey of the area. Results of these efforts were documented, and copies sent to NRC Region I in May 1987.

A close-out survey of the bunkers was conducted by the inspectors on October 29, 1987. A 10 minute videotape documenting the decontamination procedures was viewed and records were examined. Documents submitted to the NRC Region I Office were reviewed, and are enclosed as Attachments.

The eleven bunkers (E0801-E0811) are located along road E0800 within a secured area. Each bunker is approximately 25 feet wide by 80 feet long. A 6 foot by 6 foot concrete pad is located at the north end of each bunker, in front of the door. A gravel area extends from the pad to the road. The remaining area around the bunkers is field grass. The bunkers are currently empty, and there are no plans for use in the near future.

3. Instrumentation Used

Gamma radiation level measurements were made with a Ludlum Model 19 Micro-R Meter, Serial No. NRC-019637. The background radiation level was approximately 12 microrems per hour with this instrument.

Wipes were counted on a Tennelec Model LB 5100 gas flow proportional counter in the Region I Laboratory. The minimum detectable activity for this unit was calculated to be 24 disintegrations per minute (dpm) for beta, and 3 dpm for alpha.

Soil and water samples were counted on an intrinsic germanium detector and a multichannel analyzer in the Region I Laboratory.

4. Radiation Survey Results

Radiation level surveys were done in and around the bunkers. No radiation levels above background were detected throughout the areas surveyed.

5. Survey for Removable Contamination

Twenty-seven wipes were taken from floor surfaces inside the bunkers. Analysis of these wipes show no areas above the minimum detectable activity.

A water sample and a soil sample were taken on the east side of the pad in front of bunker E0804, an area from which contaminated soil had been removed. Analysis of the water sample showed no identifiable gamma peaks. Analysis of the soil sample showed only environmental levels of cesium-137 and potassium-40. A second soil sample was taken from the pad area of bunker E0804. Analysis of this sample showed environmental levels of potassium-40 and thallium-208.

6. Receipt and Transfer of Licensed Material

The inspectors reviewed the licensees records for the disposal of the licensed materials.

No violations were identified.

7. Personnel Monitoring

Dosimetry and bioassay records or personnel involved in the decontamination of the bunker were reviewed.

No violations were identified.

8. Exit Interview

The scope and results of the inspection were discussed with the individuals identified in Section 1.

Docket No. 040-08526

License No. SUC-1275

Report No. 40-8526/87-002

Attachments

1. Department of the Army Headquarters letter, May 26, 1987
2. D A, Belvoir R & D letter August 22, 1985
3. AEHA report 2843-0025-86 with letters dated September 8, 1986; August 21, 1986, and August 15, 1986
4. Special Publication BRL-SP-56 "Radiological Survey of Seneca Army Depot"

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

June 18, 2007

Docket No. 040-08526
Control No. 135163

License No. SUC-1275

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

SUBJECT: SENECA ARMY DEPOT ACTIVITY, LICENSE TERMINATION, CONTROL NO. 135163

Dear Mr. Absolom:

Please find enclosed Amendment No. 14 terminating License No. SUC-1275 as requested by your letter dated June 15, 2004. This termination is being issued in accordance with the requirements of the applicable NRC License Termination Rule (10 CFR 30.36, 10 CFR 40.42, and 10 CFR 70.38). All facilities previously used for licensed activities may be released for unrestricted use. The Notice of Availability of Environmental Assessment and Finding of No Significant Impact for this action was published on June 15, 2007 in the Federal Register, Volume 72, Number 115. A copy of the Federal Register Notice is enclosed for your information.

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Medical, Academic, and Industrial Uses of Nuclear Material;** then **Regulations, Guidance, and Communications.** You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-888-293-6498. The GPO is open from 7:00 a.m. to 8:00 p.m. EST, Monday through Friday (except Federal holidays).

Your cooperation with us is appreciated.

Sincerely,

Original signed by Elizabeth Ullrich

Betsy Ullrich
Senior Health Physicist
Commercial and R&D Branch
Division of Nuclear Materials Safety

Enclosures:
1. Amendment No. 14
2. 72 FR 33252, June 15, 2007

cc w/o enclosures:
John Cleary, Radiation Safety Officer

NRC FORM 374

U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 14

MATERIALS LICENSE

Licensee	
1. Department of the Army Commander, Seneca Army Depot Activity ATTN: SDSSE-CO	3. License number SUC-1275
2. Romulus, New York 14541-5001	4. Expiration date Not Applicable
	5. Docket No. 040-08526 Reference No.

In accordance with the letter dated June 15, 2004, this license is hereby terminated.

For the U.S. Nuclear Regulatory Commission

Date June 18, 2007

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

Elizabeth Ullrich
Commercial and R&D Branch
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406

NRC FORM 313
(9-86)
10 CFR 30, 32, 33, 34, 35 and 40

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 5-31-87

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

FEDERAL AGENCIES FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS. IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNEYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
MATERIAL RADIATION PROTECTION SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

1. THIS IS AN APPLICATION FOR *(Check appropriate item)*

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [X] C. RENEWAL OF LICENSE NUMBER SUC-1275

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include Zip Code)*

Commander
Seneca Army Depot
Attn: SDSSE-CO
Romulus, NY 14541-5001

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED.

Seneca Army Depot
Romulus, NY 14541-5001

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Michael R. Lewis

TELEPHONE NUMBER: 607-869-1432

SUBMIT ITEMS 5 THROUGH 11 ON 8½ x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.
SUPPLEMENT 1

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.
SUPPLEMENT 2

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.
SUPPLEMENT 3

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.
SUPPLEMENT 4

9. FACILITIES AND EQUIPMENT.
SUPPLEMENT 5

10. RADIATION SAFETY PROGRAM.
SUPPLEMENT 6

11. WASTE MANAGEMENT.
SUPPLEMENT 7

12. LICENSEE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY: 2C
AMOUNT ENCLOSED: $ 750.00

13. CERTIFICATION. *(Must be completed by applicant)* THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE—CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
James B. Cross	JAMES B. CROSS Colonel, Ordnance Corps	Commander	30 Oct 92

14. VOLUNTARY ECONOMIC DATA

a. ANNUAL RECEIPTS

- [ ] <$250K
- [ ] $250K–500K
- [ ] $500K–750K
- [ ] $750K–1M
- [ ] $1M–3.5M
- [ ] $3.5M–7M
- [ ] $7M–10M
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b. NUMBER OF EMPLOYEES *(Total for entire facility excluding outside contractors)*

c. NUMBER OF BEDS

d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION *(Dollar and/or staff hours)* ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? *(NRC regulations permit it to protect confidential commercial or financial—proprietary—information furnished to the agency in confidence)*

- [ ] YES
- [ ] NO

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY

AMOUNT RECEIVED	CHECK NUMBER		DATE

PRIVACY ACT STATEMENT ON THE REVERSE

NRC FORM 313
(9-85)
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FEE CATEGORY 2C
AMOUNT ENCLOSED $ 750.00

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FOR NRC USE ONLY

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AMOUNT RECEIVED	CHECK NUMBER	DATE

PRIVACY ACT STATEMENT ON THE REVERSE

SUPPLEMENT 1
Reference NRC Form 313, Block 5

RADIOACTIVE MATERIAL:

a. Element and Mass	b. Chemical and Physical Form	c. Maximum to be possessed at any one time
U238 (Depleted Uranium)	Solid metallic alloy not less than 95% U238 as 30mm cartridges under this License SUC 1275.	5 million kg
U238 (Depleted Uranium)	Solid metallic alloy not less than 95% U238 as 20mm and 25mm cartridges also controlled under NRC License 45-16023-01NA issued to US Navy; 25mm, and 105mm cartridges also controlled under NRC License SUC 1380 issued to U.S. Army, Armament,Munitions and Chemical Command (AMCCOM). Held as obsolete, unserviceable, non-repairable material for demilitarization under this license.	5 million kg
U238 (Depleted Uranium)	Solid metallic alloy not less than 95% U238 as contamination on industrial machinery and equipment.	100,000 kg

SUPPLEMENT 2
Reference NRC Form 313, Block 6

PURPOSES FOR WHICH THE LICENSED MATERIAL WILL BE USED

SECTION I. SUMMARY OF ACTIVIES

1. The 30mm PGU14 series Armor Piercing Incendiary (API) ammunition contains approximately 0.66 pounds (298 grams) of extruded DU alloy with 0.75% by weight of titanium in the form of a cylindrical penetrator 4.5 inches long and having a maximum diameter of 0.633 inch. See enclosure 1 to supplement 2 for a description of PGU-14 production lots by AEROJET and HONEYWELL. The penetrator is seated in an aluminum base and is completely contained within an aluminum windscreen or jacket. See enclosure 2 to supplement 2 for a drawing of the penetrator with aluminum body and windscreen/jacket. The PGU-14 series cartridges controlled under this license will be used in the following activities:

a. Transportation-Receipt and shipment of individual containers and pallets of Depleted Uranium (DU) ammunition. See enclosures 3,4,5,and 6 to supplement 2 for 30mm DU containers.

b. Inspection of DU cartridges during receipt, surveillance, storage and transportation activities. During these inspections, cartridges will be inspected for serviceability according to Air Force guidelines.

c. Storage of bulk quantities of DU cartridges.

d. Inventory of DU cartridges.

e. Maintenance of DU cartridges.

f. Demilitarization of 30mm PGU14 series cartridges when directed by U.S. Army Armament, Munitions and Chemical Command (AMCCOM).

g. Safety in storage.

2. The following interservice munitions: cartridges 20mm (MK 149, MK 149 Mod2) and 25mm (PGU-20 Series) controlled under NRC license 45-16023-01NA, cartridges 25mm (M919) and 105mm cartridges (M774 and M833) controlled under NRC license SUC-1380, may be demilitarized under this license. See Table 2-1 for DU weights. See enclosures 18 and 19 to Supplement 2 for cutaway drawings of 20mm (MK149), 25mm (PGU-20), and 25mm (M919).

a. Demilitarization is the process to render military items unfit for military use, no DU component will be physically altered but removed and stored for for transfer to another license holder or disposed of by burial in a licensed facility.

3. The DU ammunition controlled under this license and the licenses listed in paragraph 2 will not be chemically, physically, or metallurgically altered. The ammunition will not be fired. The ammunition will not be made commercially available.

4. Due to aging, retrograde, and demilitarization of DU munitions, component parts may be held by this license prior to disposal or transfer to another license holder.

5. Storage of government owned industrial machinery and equipment contaminated with depleted uranium may be held by this license. Storage time will be held to a minimum consistent with funding and logistic management prior to decontamination. See enclosure 7 to supplement 2 for building layout and enclosure 8, to supplement 2 for site location. No maintenance, disassembly, or unpackaging will be performed in the storage location.

6. Decontamination of government owned industrial machinery and equipment contaminated with depleted uranium may be performed by this license when directed by higher authority. See enclosures 9 and 8, to supplement 2 for building layout and site location. See Supplement 5, Facilities and Equipment for detailed description.

SECTION II. OPERATIONAL PROCEDURES-DU CARTRIDGES.

1. Transportation of DU will comply with applicable Department of Transportation (DOT) and Department of Defense (DOD) regulations at the time of shipment. The ammunition is shipped under a U.S. Department of Transportation (DOT) Exemption.

2. Standing operating procedures (SOPs) will be written for operations involving DU having the elements as necessary as contained in NRC Regulatory Guide 10.4 Exhibit 2 Steps for Preparing an SOP. Additionally due to the explosive components detailed SOPs are required by Army regulations for the known explosive hazards.

3. Receipt-Ammunition received at Seneca Army Depot will be monitored by trained personnel properly equipped as designated by the Radiation Protection Officer (RPO). A Standing operating procedure (SOP) will be followed.

4. Shipping-Ammunition shipped by Seneca Army Depot will be swiped as required by the RPO or designated individuals. A standing operating procedure (SOP) will be followed.

5. Storage. The following general requirements have been established for the storage of 30mm DU ammunition and other explosive items.

a. Packing materials, empty boxes, tools, handling equipment or any miscellaneous material will not be stored in igloos containing explosives.

b. Containers of different lots will be stacked separately and the separation between lots shall be clearly defined.

c. Sealed containers shall not be opened except for inspection.

d. Incomplete packages will be securely closed and properly marked to identify contents and quantity.

e. Only earth covered igloos will be used for storage of 30mm DU ammunition.

f. Igloos containing DU ammunition will be kept locked at all times except when authorized operations are in progress. Keys to the igloos will be under positive control at all times.

g. Component parts of DU cartridges will be segregated from complete cartridges.

6. Inventory.

a. The Army has developed specific procedures to provide for accountability of ammunition at storage locations, by using units, and in transit between installations. The Army has developed a centralized reporting system to provide worldwide stockpile visibility. The centralized reporting system is used to assist in stockpile, production, and logistics planning. The inventory records kept by each installation and each unit that has been issued ammunition items are used for accountability purposes. Additionally, the inventory records associated with ammunition shipments are used for accountability purposes.

b. A 100 percent inventory/location survey will be conducted at least annually. The inventory will be based on container count; individual containers will not be opened. All ammunition containers are sealed with lead wire seals.

7. Inspection.

a. Quality Assurance Specialist (Ammunition Surveillance) (QASAS) personnel of the Directorate of Product Assurance will perform surveillance inspections as required to assess serviceability/acceptability of end items for retention in stockpile. No inspections involve the disassembly of the cartridge.

b. Magazine (Igloo) Inspection. This inspection is conducted as required per current regulation but not less than annually to assure proper storage conditions are maintained. In addition to the visual inspection of the structure, the lightning protection system is tested for grounding adequacy as required per current regulations; presently every 24 months.

c. Safety in storage. This inspection will be conducted on unserviceable, uneconomically repairable stock to assure continued safe storage. This inspection will be performed yearly. This inspection is required by Ammunition Surveillance procedures.

8. Maintenance.

a. Maintenance will be performed by Directorate of Mission Operations personnel only on non-DU components. The cartridge shall not be disassembled. Typical operations are: removal of external corrosion, touch-up painting and stenciling, preservation and packaging, and disassembly of non DU components for replacement. Monitoring for excessive radiation levels will be conducted during maintenance operations. Wipe tests may be conducted, at the direction of the Radiation Protection Officer (RPO), to detect presence of contamination.

SECTION III. OPERATIONAL PROCEDURES-DEMILITARIZATION OF 20mm,25mm and 30mm DU CARTRIDGES.

1. Demilitarization will be performed using Depot Maintenance Work Requirements (DMWRs) or Letters of Instruction (LOIs) written specifically for each cartridge. Standard Operating Procedures (SOPs) will be written at this depot for each specific demiltarization operation to be reviewed by the Radiation Protection Officer. SOPs are further reviewed by U.S. Army Defense Ammunition Center and School (USADACS) personnel. Demilitarization will be performed only when directed by AMCCOM. Licensed material will be transfered to another license holder or disposed of by burial. The disposition of any unsafe material will be generated by demilitarization will be coordinated through the AMCCOM Radioactive Waste Disposal Division. Demilitarization will be by mechanical separation; no cutting, grinding, or metallurgical processes will be performed on the DU. Volume of demilitarization will depend on the deterioration rate of munitions, work load of other Depots authorized demilitarization, and work load assigned to this Depot by higher Headquarters.

2. Demilitarization of the 30mm DU cartridges will be performed by the Ammunition Peculiar Equipment 2214 Breakdown Machine (APE 2214). The APE 2214 is designed to break down and segregate parts of 30mm ammunition to include the PGU14 series DU cartridges. The APE 2214 with kits can be used for 20mm and 25mm DU cartridges. The major physical objective of the breakdown process is to do so without damage to the projectile and without human involvement. The products of the process are the cartridge propellant, cartridge case (in two pieces), a primer, flashtube and an undamaged projectile (penetrator). The APE 2214 was tested extensively using inert material and one is presently in operation at Savanna Army Depot Activity (NRC License SUC-1394).

a. The major functional components of the APE 2214 are:

(1) The controller, which is the programmed and governs the application of the power systems inputs to the other major functional components.

(2) The power systems, which include pneumatic, electrical and hydraulic systems.

(3) The breakdown center where the cartridge is processed. The indexing table assembly which is rotated by an hydraulically driven top plate drive index table and which supports and delivers projectiles as they are broken by the five processing stations.

(4) Station I-Cartridge Load which consist of a pneumatic cylinder that powers a pushrod which pushes a cartridge down from the cartridge delivery system into the a cartridge cup mounted on the index table.

(5) Station II-Projectile Breakout which consist of a hydraulically driven projectile breakout station slide on which are mounted two rollers that crimp the cartridge when the slide advances. Also mounted on the projectile breakout station slide is the projectile pusher assembly which frees the the projectile from the cartridge case. These actions break and disengage the cartridge case forcing out the projectile and allowing the propellant to drain. Station II is serviced by the first of three removal conveyor belts and the first of two vacuum systems connections that service the APE 2214. The conveyor belt removes the projectiles from this station and the vacuum removes the propellant.

(6) Station III-Cartridge Case Shear Station which consist of a hydraulically driven shear station slide on which is mounted a shear station cutter which cuts off the deformed portion of the cartridge case when the slide advances so the remainder of the cartridge case can be removed from the cartridge cup later. A conveyor removes the cutoff portion of the case from this station and a vacuum systems removes any remaining propellant.

(7) Station IV-Primer Removal which consist of a hydraulic cylinder that powers a pushrod which pushes the primer from the cartridge case. The station also has a solenoid operated air jet system which blows the primer into a primer removal chute.

(8) Station V-Cartridge Case Unload which consist of a hydraulically powered cylinder that powers a pushrod which pushes the remainder of the cartridge case from the cartridge case cup. Station V also has a pneumatically operated arm and robotic gripper hand which grasps the cartridge case and drops it on to a conveyor belt for removal. See Enclosure 10 to Supplement 2 for a picture of the APE 2214 at the design facility.

(9) Associated equipment consist of conveyors for transportation of materials. Closed circuit TV for monitoring of the breakdown. Powder draw-off vacuum system. APE 2226 for removal of the cartridge from the linked tube. The APE 2226 is entirely operated by air.

(10) The demilitarization of 30mm DU cartridges will be performed in building 612. See facilities and equipment for a description of building 612. Enclosure 11 to supplement 2 shows the line layout for 30mm demilitarization in building 612.

a. Tracers if present will be removed prior to packaging.

b. Surveys, personnel monitoring, and air monitoring will be as described in Supplement 10, Radiation Safety Program.

SECTION IV. OPERATIONAL PROCEDURES-DEMILITARIZATION OF 105mm CARTRIDGE

1. Demilitarization of M774 and M833 will be performed using Depot Maintenance Work Requirements (DMWRs) or Letters of Instruction (LOIs) written specifically for each cartridge. See enclosures 12 and 13 to supplement 2 for technical description of M774 and M833. Enclosure 14 to supplement 2 shows an exploded view of a 105mm cartridge. Standard Operating Procedures (SOPs) will be written at this depot for each specific demilitarization operation to be reviewed by the Radiation Protection Officer. SOPs are further by U.S. Army Defense Ammunition Center and School (USADACS) personnel. Licensed material will be transfered to another license holder or disposed of by burial. The disposition of any unsafe material generated by demilitarization will be coordinated through AMCCOM Radioactive Waste Disposal Division. Demilitarization will be by mechanical separation; no cutting, grinding, or metallurgical processes will be performed on the DU. See Enclosure 15 to Supplement 2 for the line layout for 105mm DU demilitarization.

2. Demilitarization of the 105mm DU cartridge will be performed by the Ammmunition Peculiar Equipment 1001 Vertical Pull Apart Machine (APE 1001). See enclosure 16 and 17 to supplement 2 for a description of the APE 1001. The pull apart process will be done by remote control to protect the worker. The APE 1001 works as follows:

a. By remote control the safety door is closed. The probe, actuates a bleed valve, which automatically closes the shield door and locks the safety door in a closed position.

b. When the shield closes, a bleed valve raises the fulcrum arm into the pull position.

c. Another bleed valve closes the vice arms on the projectile when the the fulcrum arms completes its upward motion.

d. As the vise arm closes, a bumper sensor, actuates the pull apart motion.

e. When the fulcrum arm returns to the down position, the arm presses a bleed valve which opens the shield door, releases the locking cylinder and allowing the operator to open the safety door.

f. After the doors are open the operator removes the cartridge case, grasps the projectile with both hands and releases the projectile by pressing one of two bleed valves. The projectile is bagged and cartridge is swiped to check for contamination. Contaminated cases are bagged and set aside for disposition. Clean cases are placed on endless conveyor for further processing.

g. Prior to final packaging, the M13 tracers are removed.

h. Packaging will be with the windshield, bourrelet, sabot, base seal, obturator, and fin assembly installed.

i. Powder is packaged and labeled as contaminated waste until proven otherwise.

SECTION V. OPERATIONAL PROCEDURES-STORAGE OF CONTAMINATED MACHINERY AND EQUIPMENT.

1. Contaminated machinery and equipment will be stored in building 825. See Facilities and Equipment Supplement 5 for description and site location. They will be placed on plastic to prevent contamination of the floor. Access to the machines will be strictly controlled. Surveys will be as specified in Supplement 6, Radiation Safety Program. No unpackaging or work will be performed in this building. The building will be properly posted in accordance with 10 CFR 20.203 and subsequent regulations.

SECTION VI. OPERATIONAL PROCEDURES-DECONTAMINATION OF MACHINERY AND EQUIPMENT.

1. A portion of the government's inventory of machinery and equipment is contaminated with DU. To reclaim this machinery and equipment for reuse or disposal, decontamination must be performed.

2. The machinery and equipment will be received from licensed facilities shipped in accordance with current Department of Transportation and NRC regulations.

3. Decontamination will be performed in building 819 a dedicated building which will be properly posted in accordance with 10 CFR 20.203 and subsequent regulations. Controls will be instituted to minimize the release of radionuclides into the environment and minimize the exposure of personnel. See Facilities and Equipment for a description and site location.

a. Air sampling, bioassays, and TLDs are covered in Supplement 10, Radiation Protection Program.

4. Consideration will be given to the expense of complete decontamination versus replacing or removal of components. Generation of radioactive waste will be kept to a minimum. Generation of mixed waste will be avoided when possible.

5. Action levels for removable surface contamination for inanimate objects will be in accordance with Table 2-2, from NRC Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material.

6. Care will be taken to avoid further spread of contamination. The following general steps will apply.

a. Contamination will be contained by the use of monitoring and protective clothing.

b. Work will be from the area of least contamination toward area of maximum contamination.

c. The minimum amount of decontamination liquids will be used when possible.

d. The mildest decontamination method or mildest decontamination agent will be used whenever possible.

7. The following methods of decontamination may be used with consideration given at all times to the protection of personnel, radiation levels, minimization of radioactive waste, minimization of mixed waste and protection of the environment.

a. Dry vacuuming with an approved vacuum cleaner equipped with HEPA filters The use of brooms or other dry sweeping methods will be forbidden.

b. Damp mopping with the minimum amount of solution with frequent changing of rags to minimize spread of contamination.

c. Wet vacuuming with an approved cleaner with absolute filters.

d. Cleaning with biodegradable decontaminant fluids.

e. Alternate methods may be developed if the above general methods are not effective. Different base materials may require different methods.

f. Carbon Dioxide blasting. See paragraph 11 this section.

8. Protective clothing and equipment requirements will vary with the degree of contamination and the extent of engineering controls applied. Protective clothing and equipment will be determined by the Safety Manager and Radiation Protection Officer and may include some of the following:

a. National Institute for Occupational Safety and Health/Mine Safety and Health Administration approved respirators with appropriate cartridges or airline respirators. Fullface respirators will be used.

b. Full protective clothing.

c. Safety shoes and covers.

d. Gloves.

e. Safety glasses.

f. Air monitoring devices

g. Personnel monitoring devices (extremity and whole body).

h. Hearing protection.

9. Standing Operating Procedures (SOPs) will be written at this depot for decontamination, having the necessary elements of NRC Regulatory Guide 10.4 Exhibit 2, Steps for Preparing an SOP and necessary elements for type, size and level of contamination. Review will be as in Supplement 2, Section III paragraph 1.

10. Only NRC licensed firms specializing in laundry of radioactive contaminated clothing will be used in the cleaning of protective clothing.

11. Decontamination of machinery and equipment may be performed using carbon dioxide blasting technology.

a. Cleaning with carbon dioxide is a patented techno-industrial cleaning system that harnesses the impact-flushing power of high-velocity dry ice. The system uses small, uniform pellets of carbon dioxide as a cleaning agent. When the pellets strike the surface to be cleaned, the contaminant or coating is removed without altering or damaging the surface. Upon impact the pellets sublime. The expansion of the carbon dioxide from a solid to a gas adds a lifting force to speed removal of the contaminant.

b. Carbon dioxide does not become radioactive and just disappears harmlessly into the air. The contaminated piece is then dry wiped and passed to a cleaner area for contamination analysis or further cleaning if needed.

c. The only portion of the carbon dioxide blasting equipment that will be in the contamination control area will be through the wall blast hose with a trigger operated blasting gun.

d. Due to the nature of this operation, a plastic disposable room will be built inside building 819. See Enclosure 9 to Supplement 2, page 1 of 2 for picture and process layout.
layout.

e. Prior to start up of the decontamination process the air flow patterns will be determined using inert machines as targets. Predominant airflow patterns and likely radioactive material transport routes will be noted. The locations of ventilation air inlets and exhausts will be ajusted to maximize worker protection.

f. Personnel dress out procedure:

(1) Dress out in full bodysuit, to include booties, coveralls, hood and gloves.

(2) Full face, supplied air respirator.

(3) Tape all joints and exposed areas.

g. Operating procedures:

(1) Turn on air filtration/ventilation units and monitoring staplexes. Air filtration/ventilation units sized to maintain a negative air pressure in Plastic Rooms. Plastic Structure will be posted in accordance with 10 CFR 20.203 and subsequent regulations.

(2) Lay two sheets of plastic on floor of Area 1.

(3) Move in packaged, contaminated machine/equipment and place under 4' x 4' makeup air hole in plastic ceiling of Area 1.

(4) Close both sets of plastic doors to Area 1.

(5) Dress out in protective clothing in Area 4. Hookup to supplied air prior to entering area 1 or area 2.

(6) Form curtain around machine with third sheet of plastic.

(7) Remove wrapping around machine, monitoring for contamination, and dispose of accordingly.

(8) Begin to disassemble and clean machine.

(9) Blasting will be toward the Air Filtration/Ventilation Units.

(10) Parts that have been removed and have had the gross contamination removed will be moved into Area 2.

(11) Do final cleaning of parts in this Area 2.

(12) Take swipes and direct instrument readings to determine if any removable or fixed contamination exists.

(13) Parts determined clean will be removed through Area 3.

(14) When main body of machine has had gross contamination removed, the curtain will be lowered and folded in such a manner that all contamination will remain inside and will be disposed of in the appropriate manner.

(15) Machine will be raised and set on blocks.

(16) Underside of machine will be cleaned.

(17) Do final cleaning of machine body.

(18) Wrap and dispose of second sheet of plastic under machine.

(19) Clean plastic floor.

(20) Take swipes and direct instrument readings to determine if any removable or fixed contamination remains.

(21) When machine and floor are determined clean, remove machine to outside.

h. Decontamination/outprocessing of personnel:

(1) Remove booties, coveralls, gloves, in that order rolling inside out to capture contamination inside.

(2) Monitor person thoroughly.

(3) Remove or wash any contamination found.

(4) Remove supplied air mask and hood.

(5) Monitor neck and face.

(6) Wash.

i. Self contained breathing appratus for emergency use will be stored in the building.

DU CARTRIDGES

CARTRIDGE	DODIC	DU per Round
20mm MK149	A675	70 gm - 0.15 lbs
25mm PGU-20	A979	148 gm - 0.32 lbs
25mm M919	----	97 gm - 0.21 lbs
30mm PGU-14	B103,BB103	298 gm - 0.66 lbs
105mm M774	C523	3364 gm - 7.41 lbs
105mm M833	C524	3668 gm - 8.08 lbs

TABLE 2-1

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDES[a]	AVERAGE[b c f]	MAXIMUM[b d f]	REMOVABLE[b e f]
U-nat, U-235, U-238, and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm^2	3000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm $\beta\gamma$/100 cm^2	15,000 dpm $\beta\gamma$/100 cm^2	1000 dpm $\beta\gamma$/100 cm^2

[a]Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitti nuclides should apply independently.

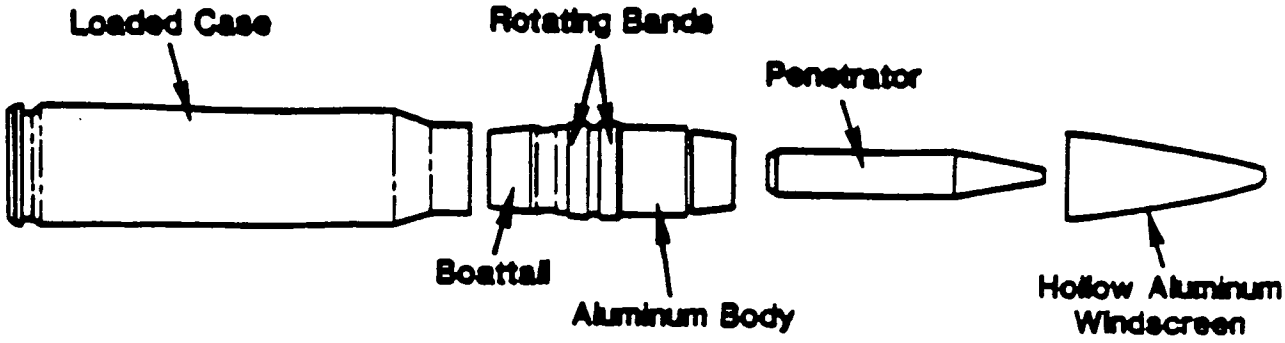
[b]As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c]Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

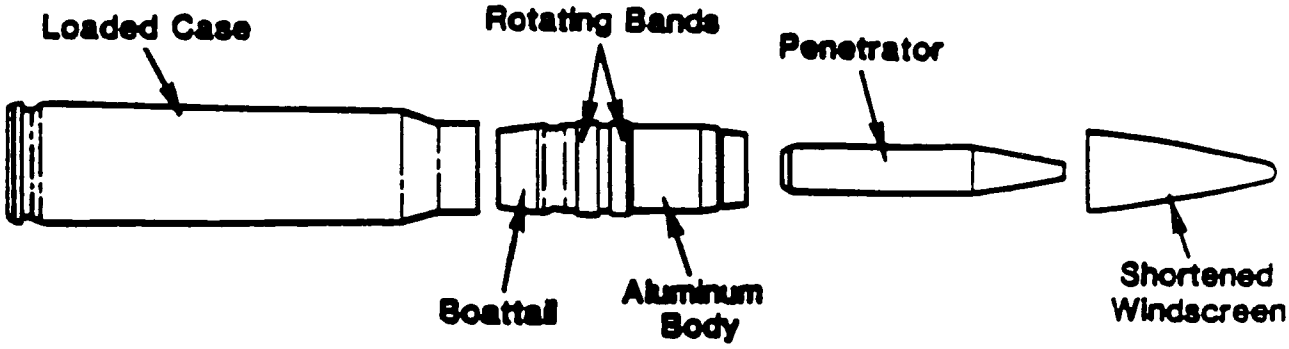
[d]The maximum contamination level applies to an area of not more than 100 cm^2.

[e]The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

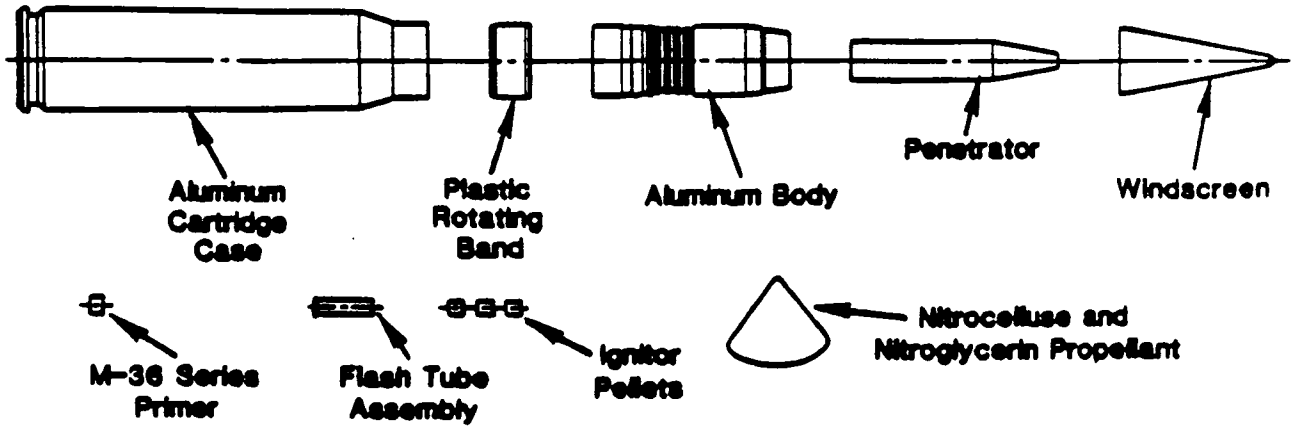
[f]The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.



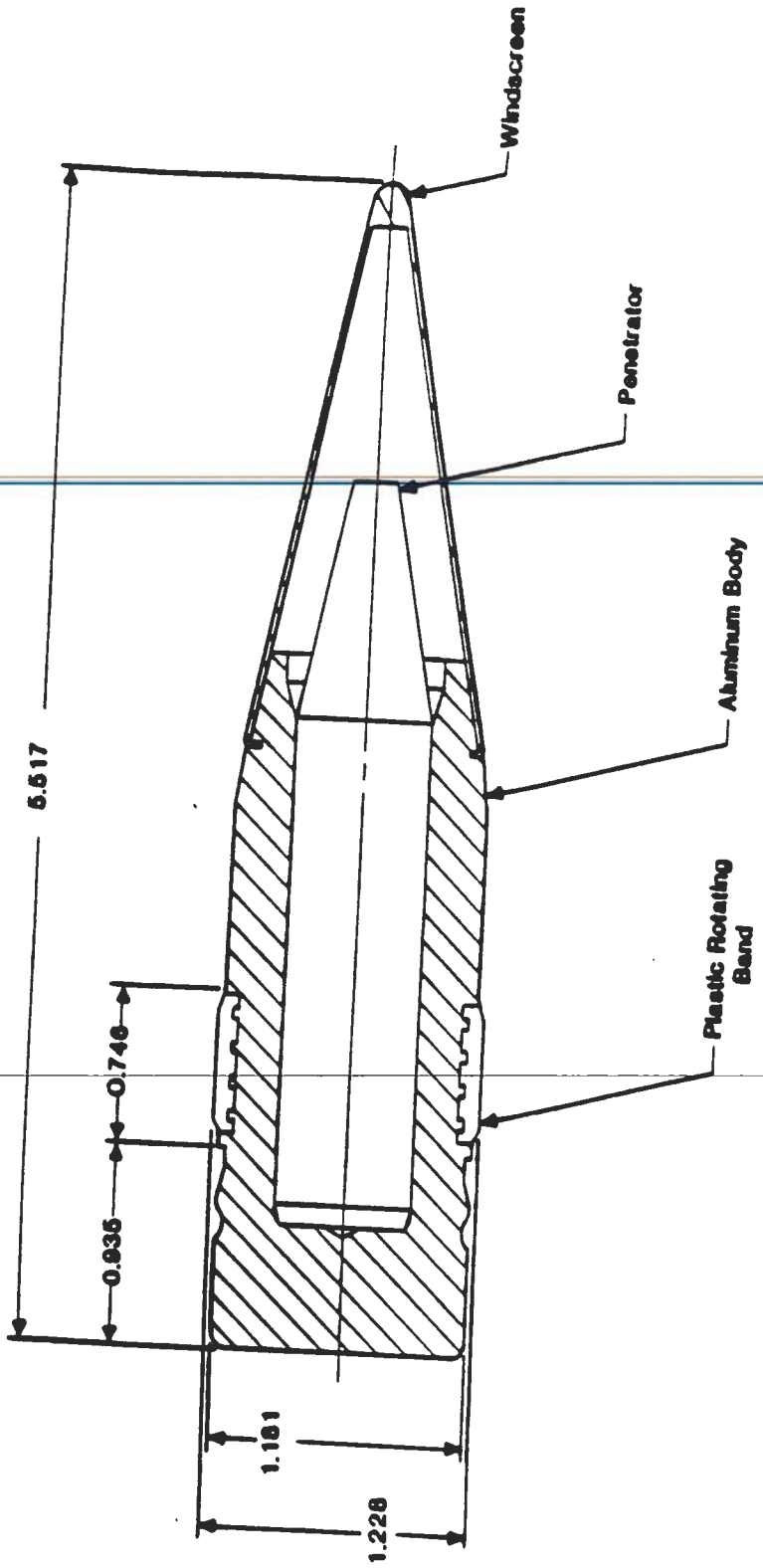
Cartridge, 30MM, PGU-14A/B (API) Early Production Lots (Aerojet)



Cartridge, 30MM, PGU-14B/B (API) Current Production Lots (Aerojet)

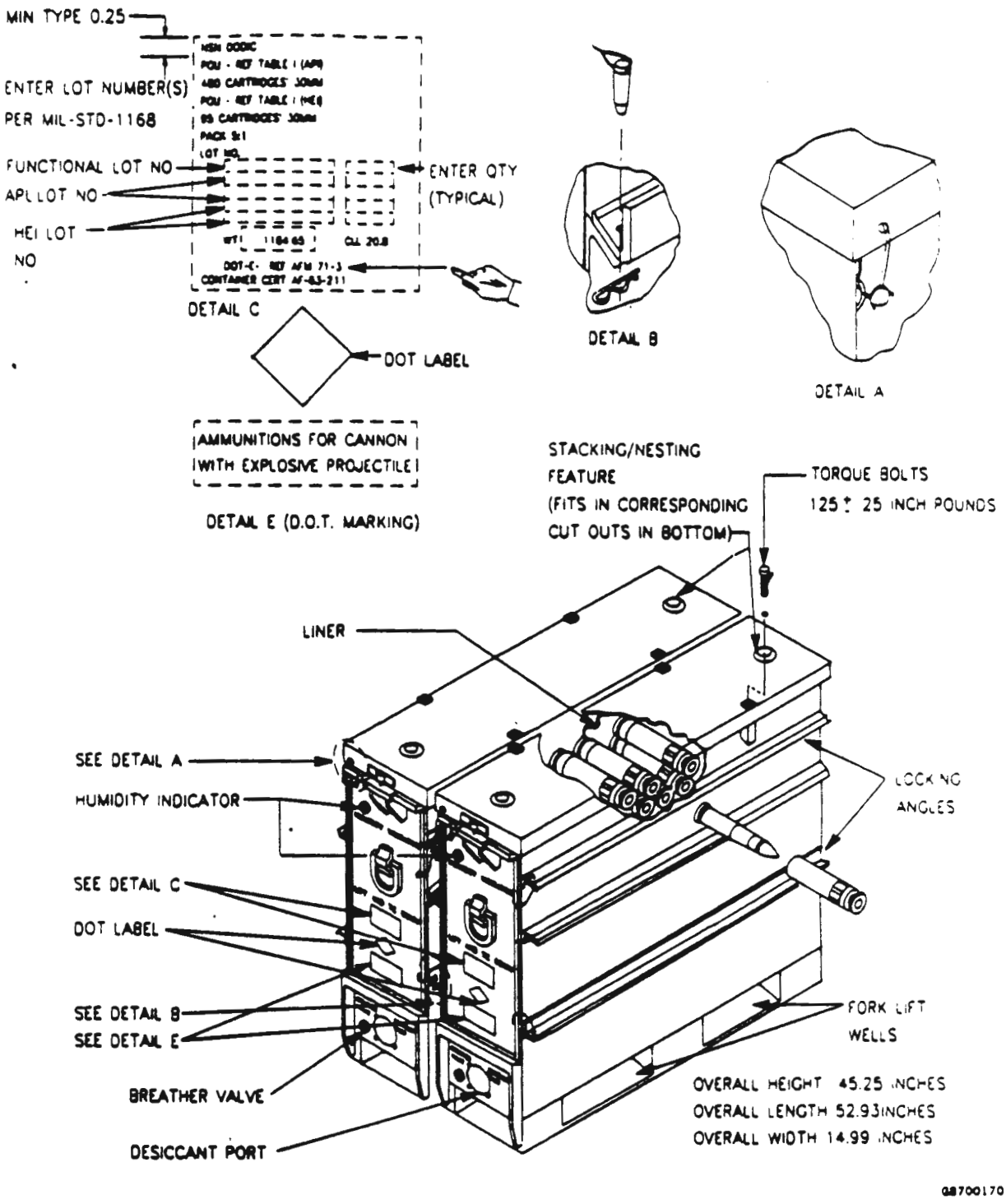


Components of 30MM Armor Piercing Incendiary Cartridge, PGU-14A/B (Honeywell)



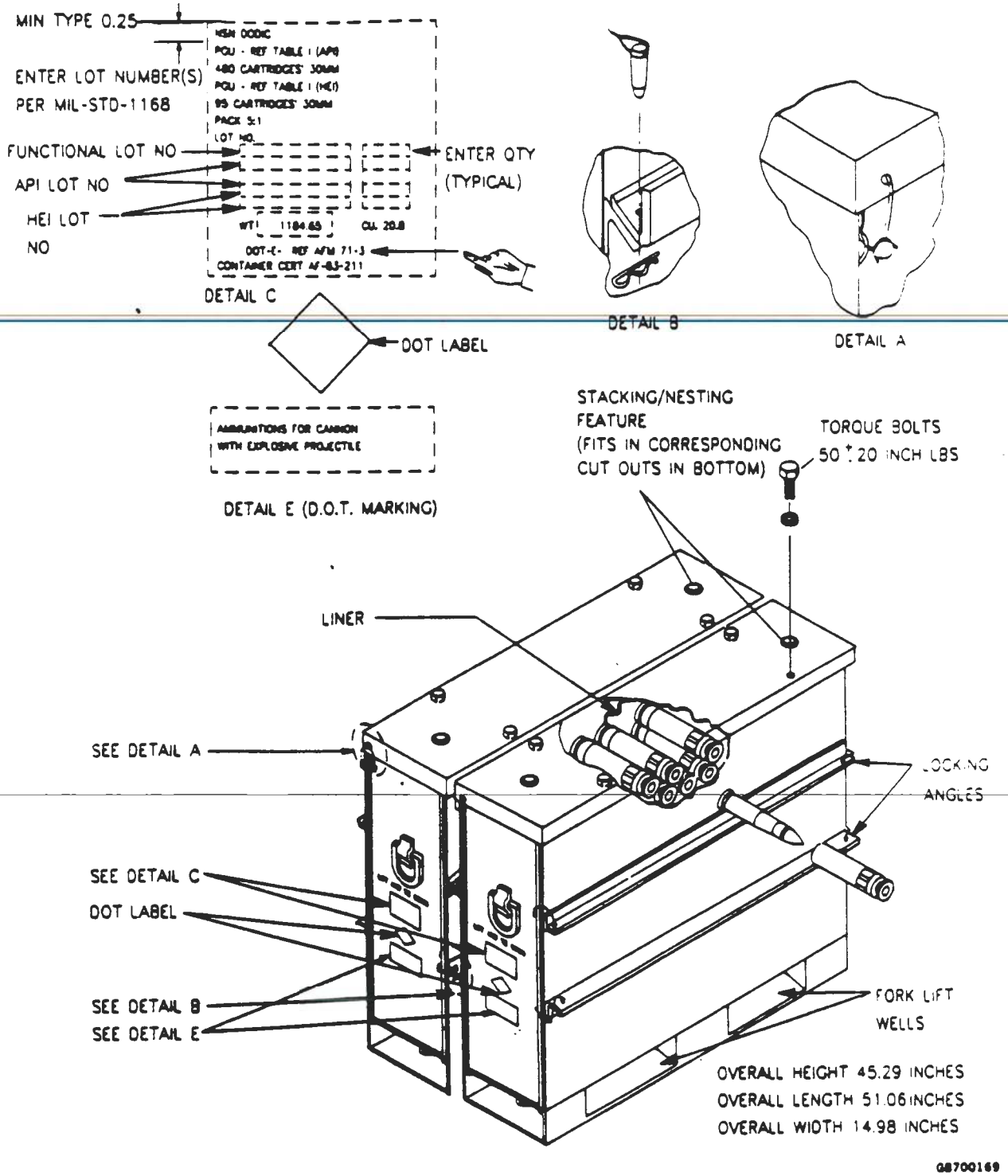
Projectile, 30MM PGU-14A/B (API)

Enclosure 2 to Supplement 2



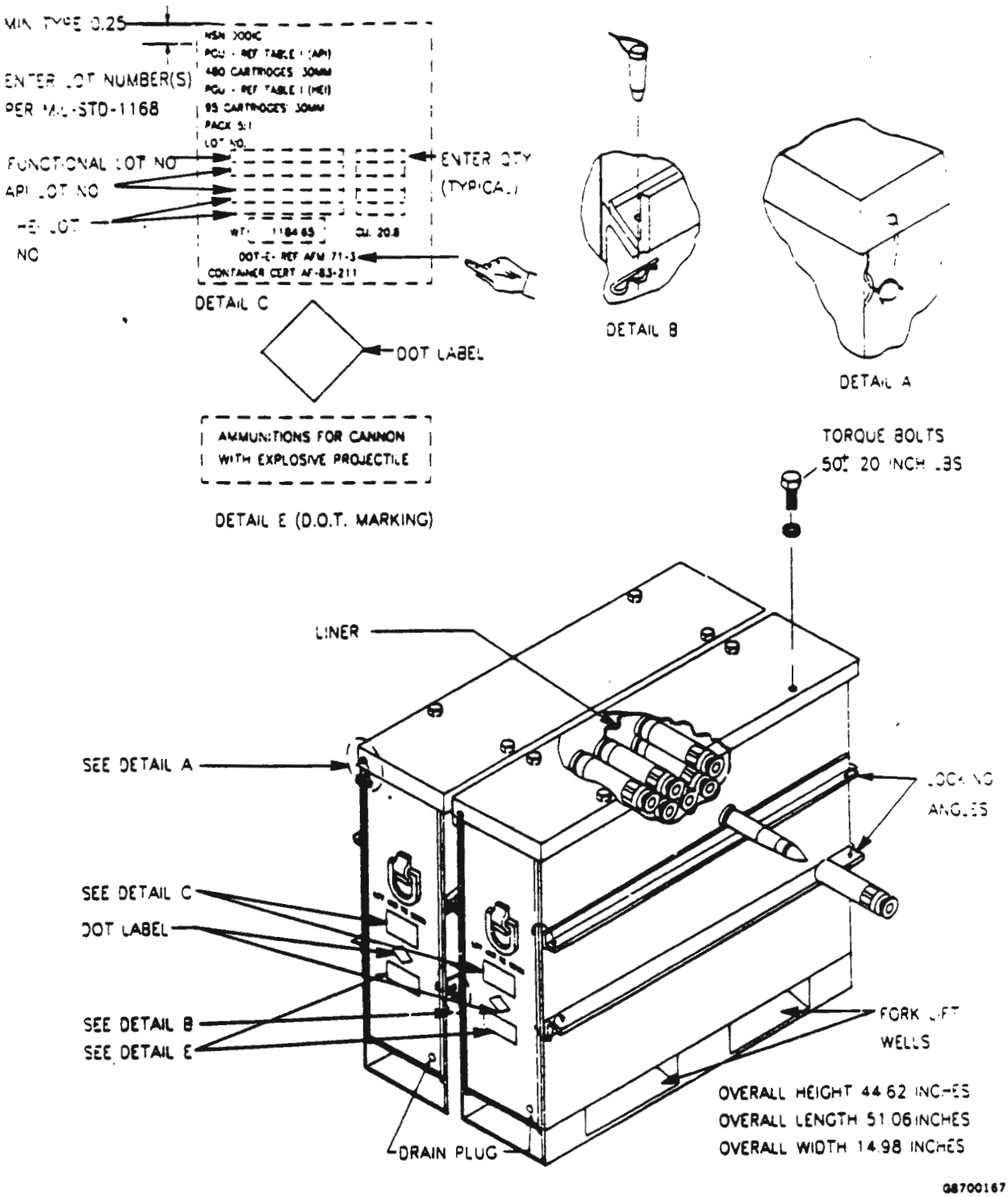
CNU-383/E Shipping and Storage Container (Typical)

Enclosure 3 to Supplement 2



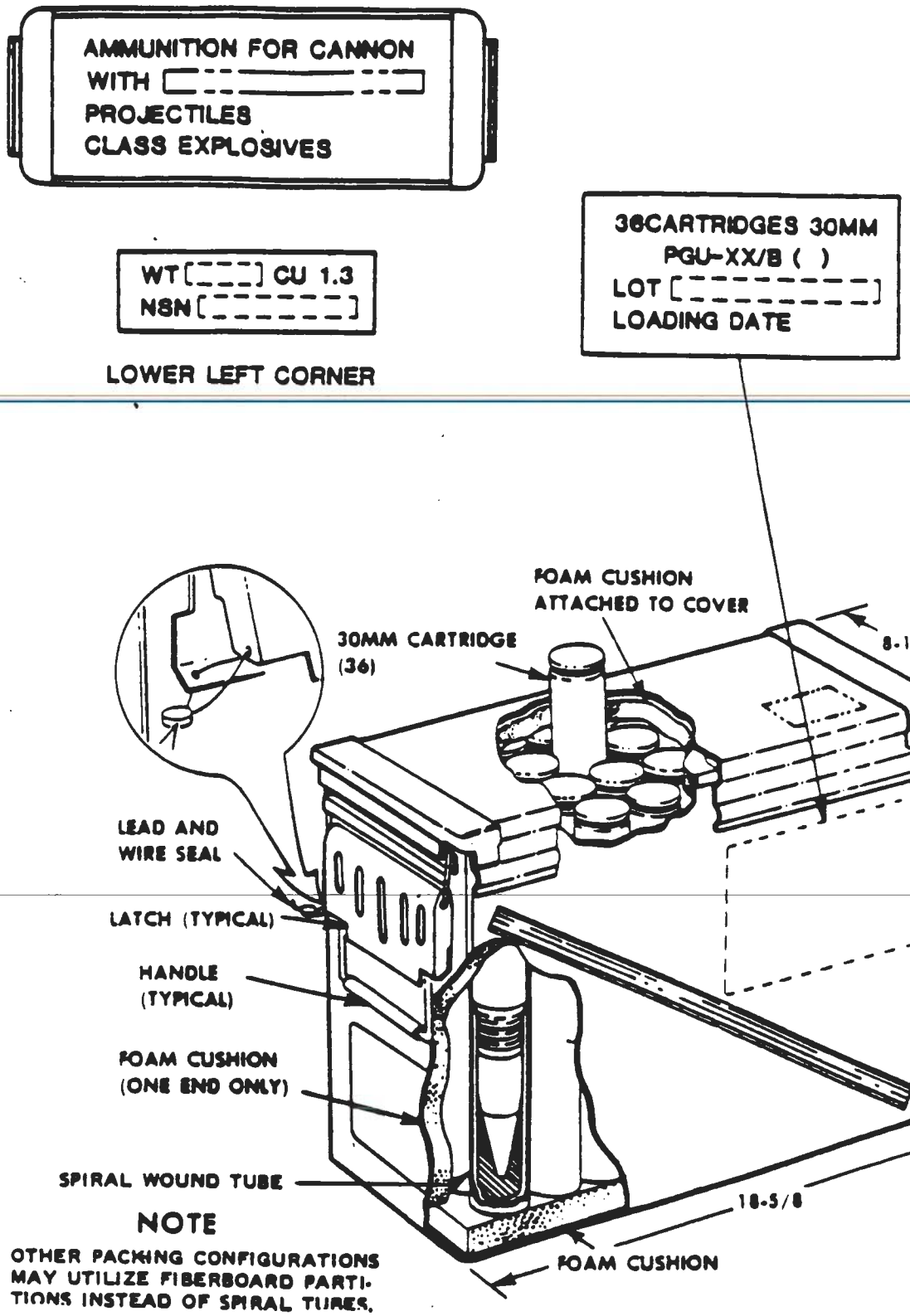
CNU-332A/E Shipping and Storage Container (Typical)

Enclosure 4 to Supplement 2

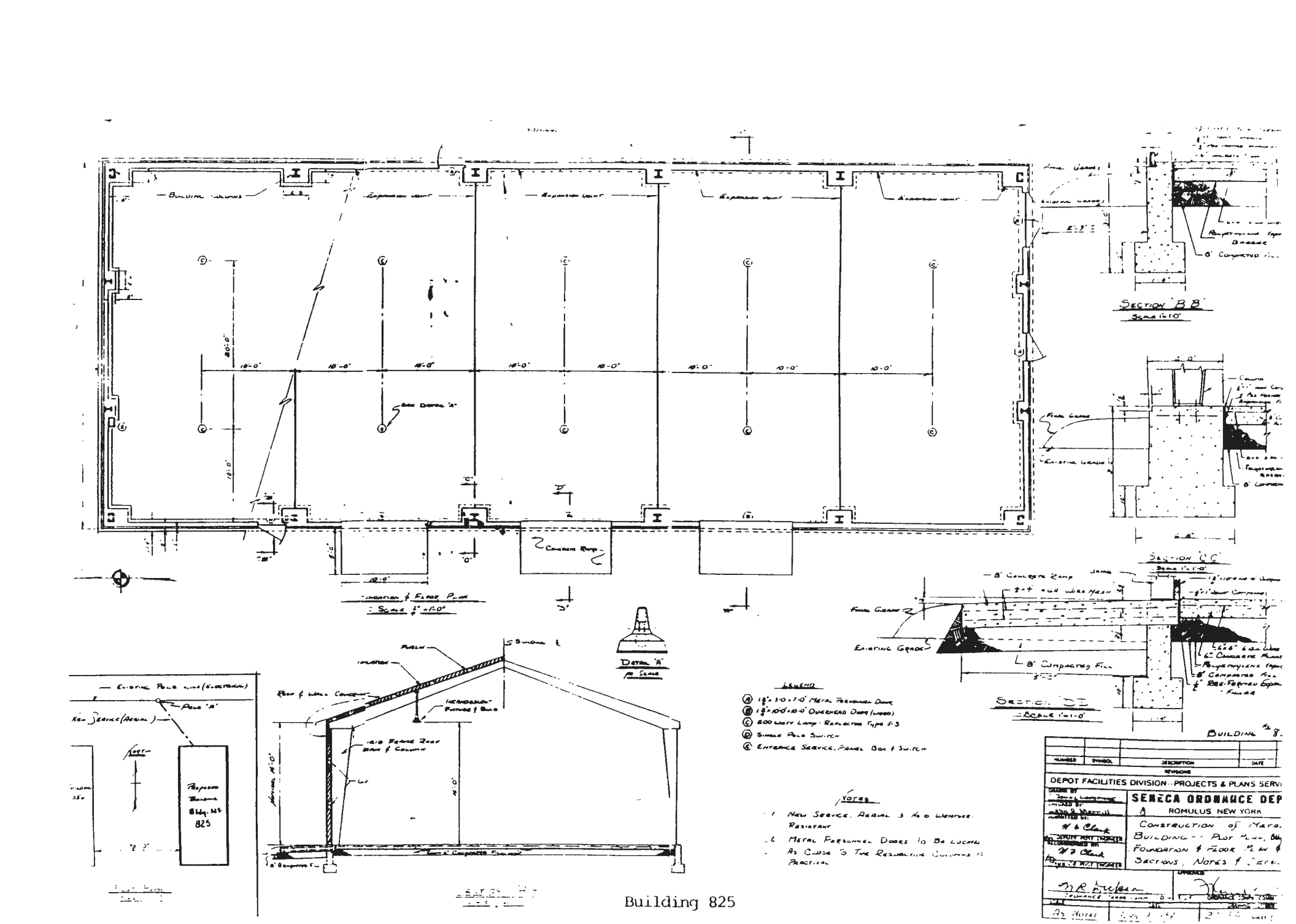


CNU-309A/E Shipping and Storage Container (Typical)

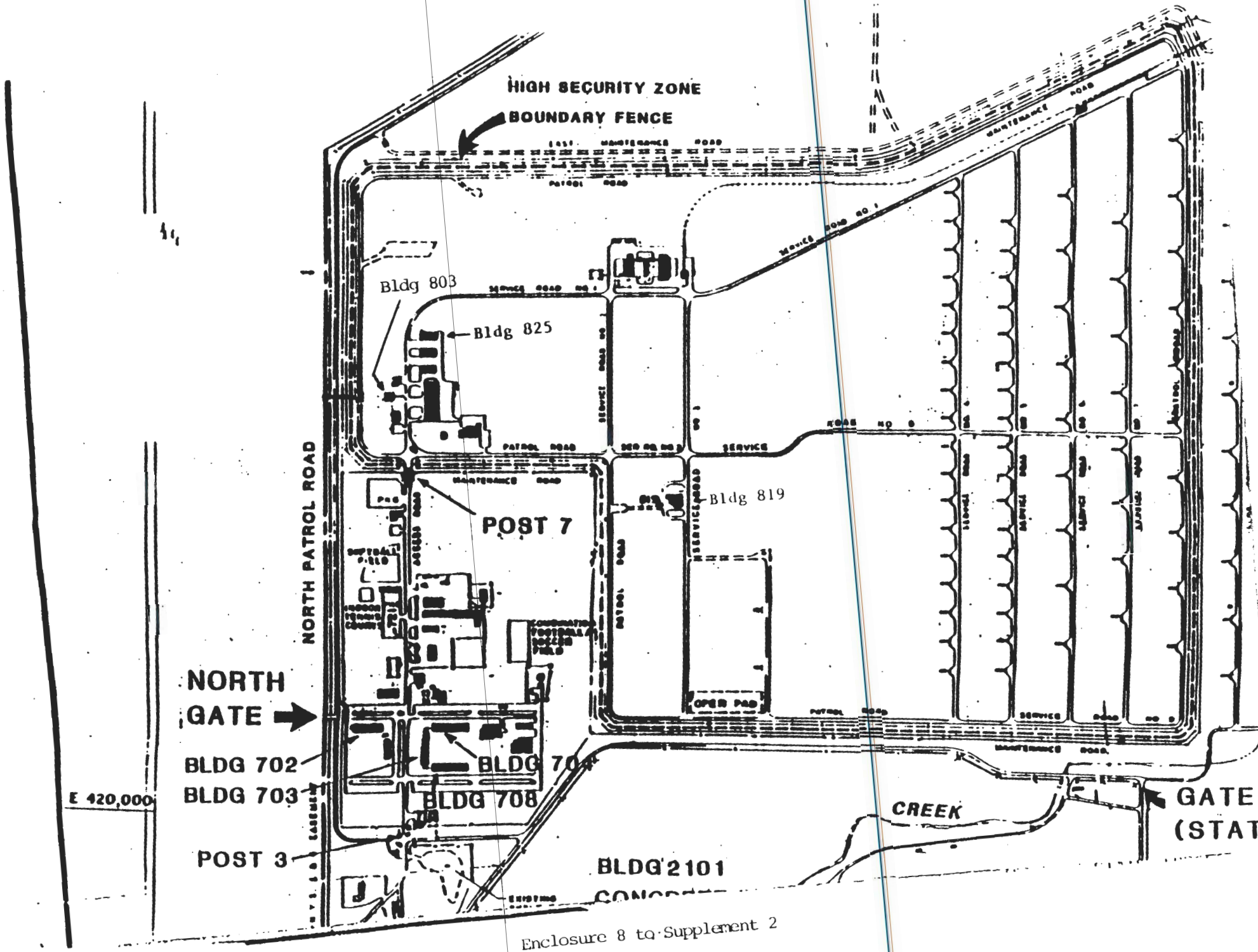
Enclosure 5 to Supplement 2



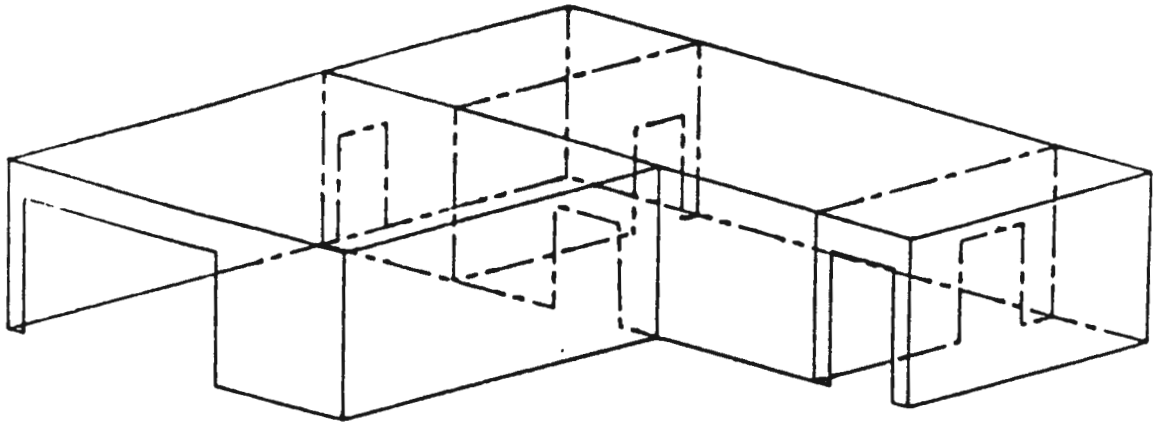
M548 Shipping Container Outer Package/Markings



Enclosure 7 to Supplement 2

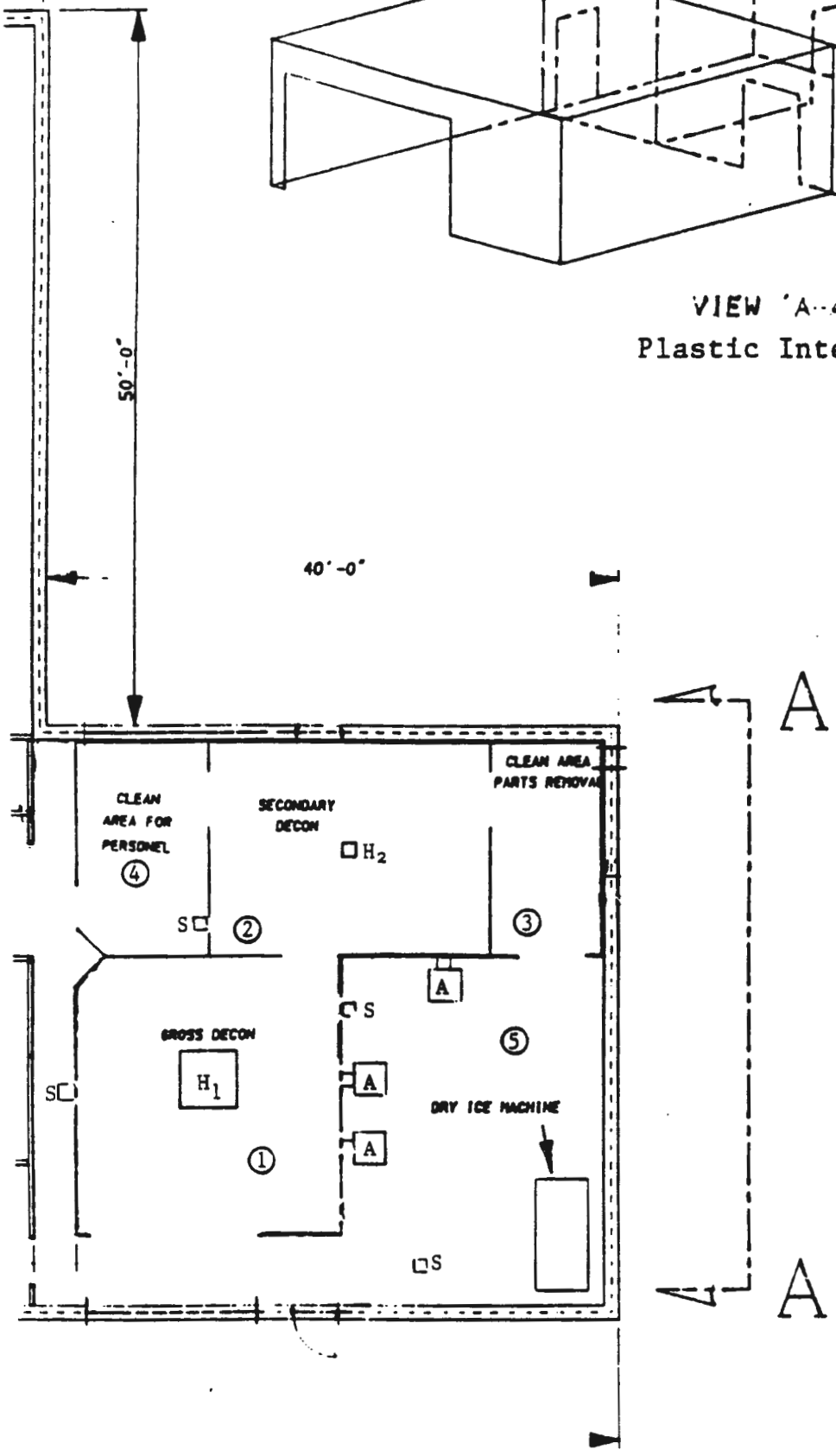


Enclosure 8 to Supplement 2



VIEW 'A-A'

Plastic Interior Rooms



FACILITY/EQUIPMENT LAYOUT
EAST SIDE -- BUILDING 819

AREA ① - Gross Decontamination Roo

AREA ② - Secondary Decontamination Room

AREA ③ - Clean Area for Parts Removal

AREA ④ - Clean Area for Personnel In/Out Processing

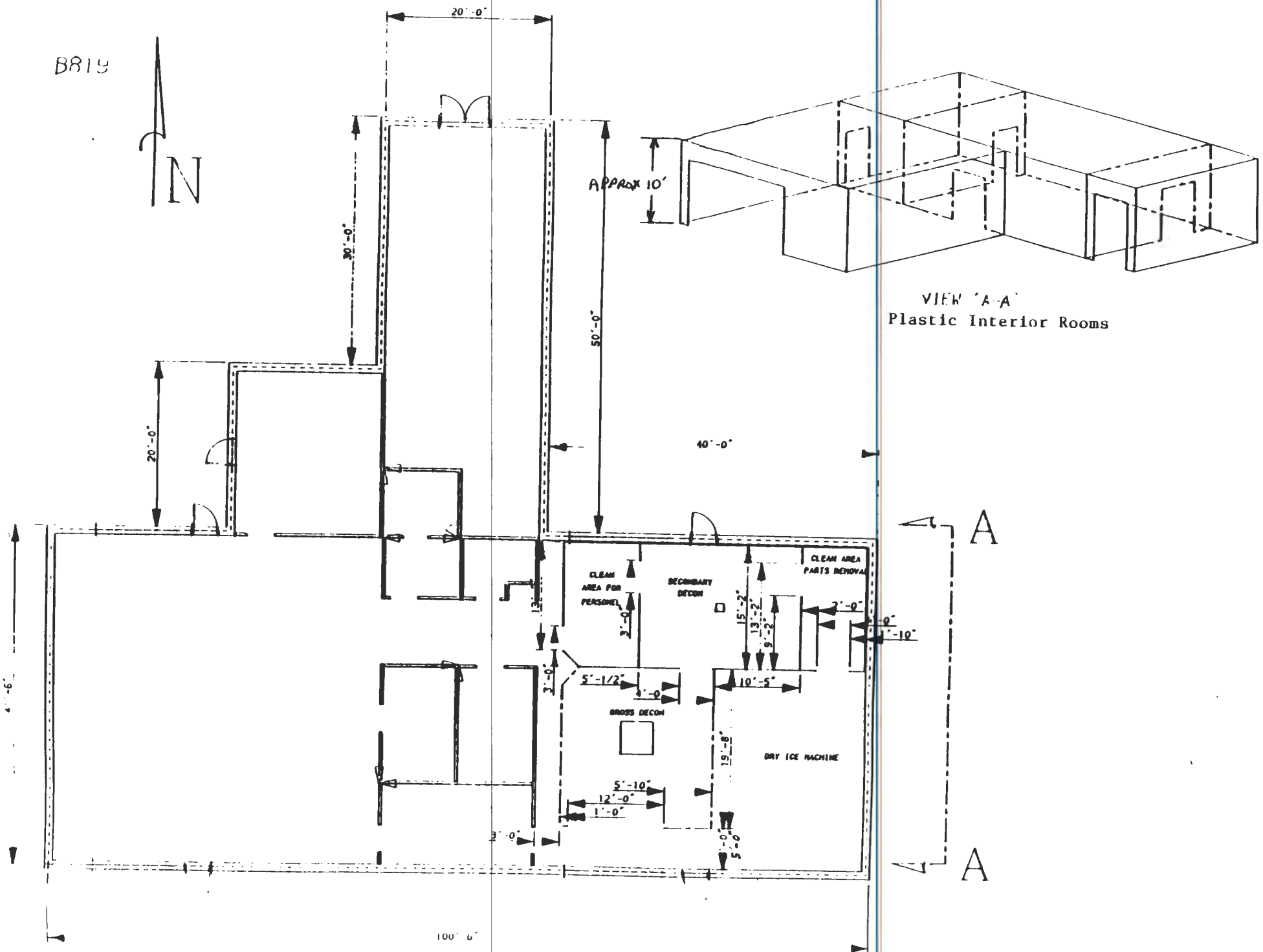
AREA ⑤ - Clean Area

A - Air Filtration/Ventilation Unit with HEPA Filters

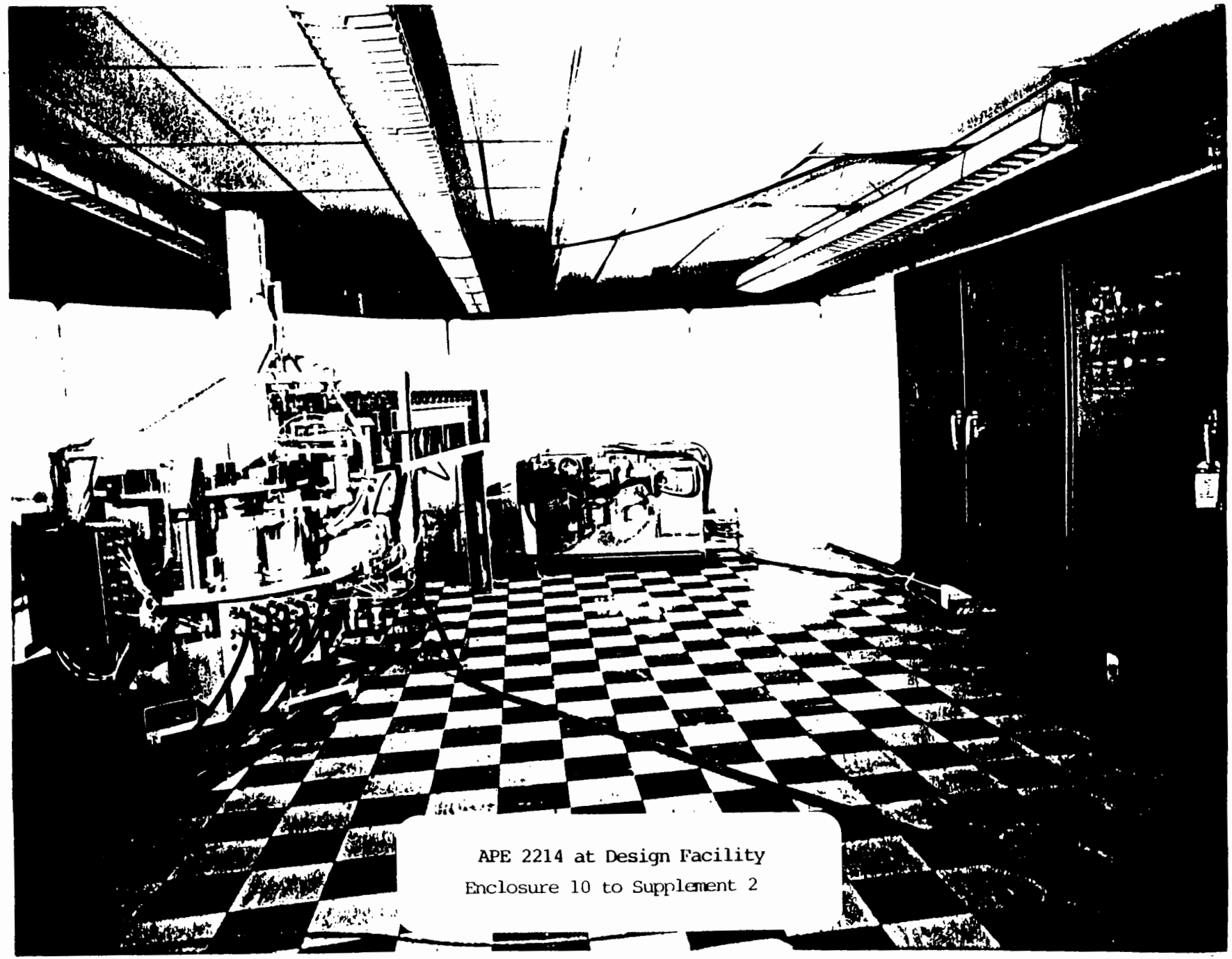
S - Staplex Air Samplers

H_1 - Hole in Plastic Ceiling for Air Makeup and Hoist Attachment

H_2 - Hole in Plastic Ceiling for Air Makeup

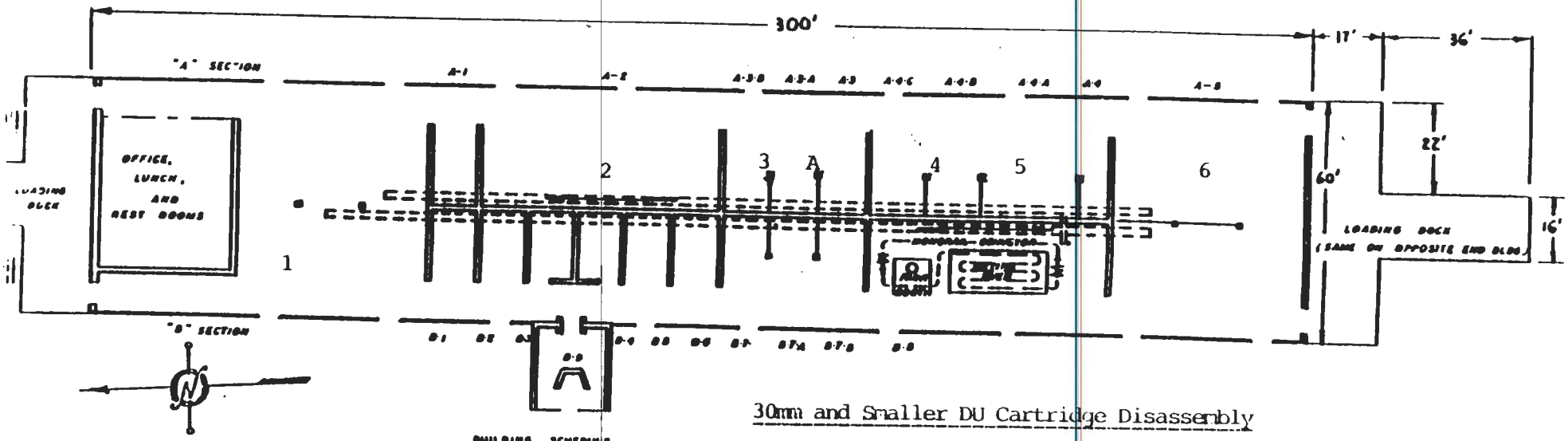


VIEW 'A-A'
Plastic Interior Rooms



APE 2214 at Design Facility

Enclosure 10 to Supplement 2



30mm and Smaller DU Cartridge Disassembly

1 Receive Ammunition

2 Unpack Ammunition

3 APE 2214 Seperates Projectile from Case

4 Components Removed from Conveyors

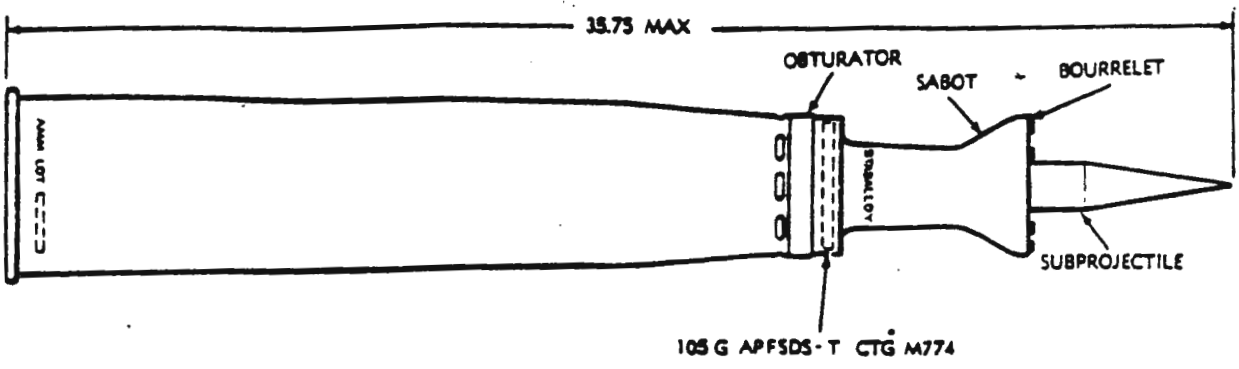
5 Pack Components for Storage or Shipment

A APE 2214 *

6 Storage Prior to Shipment

* Air Monitor Placement

CARTRIDGE, 105-MILLIMETER: APFSDS-T, M774



ARD80-0051

Type Classification:

LCCA Oct 1980.

Use:

This cartridge is an armor-piercing antitank cartridge and is intended for use in 105mm, M68 gun against armored targets.

Description:

The projectile consists of a sub-projectile and sabot. The sub-projectile consists of a monolithic staballoy (depleted uranium) core, which is fitted with an aluminum windshield with steel tip to eliminate aerodynamic heating and an aluminum fin assembly. The aluminum sabot, composed of three 120° sections, is assembled around the sub-projectile. A steel bourrelet, containing three shear cuts, is screwed to the sabot forward face. A nylon obturator and polypropylene seal is assembled around the sabot, and a silicone rubber seal is applied over the rear face of the sabot. An M13 Tracer is assembled to the fin and is held in place by a threaded plug and disc assembly. The projectile is crimped to an M148A1B1 Cartridge Case, which holds approximately 13 pounds of M30 propellant, and is fitted with an M120 electric primer. A gun tube wear-reducing titanium-dioxide liner is assembled to the interior wall of the cartridge case.

Functioning:

During projectile flight, the tracer burns for a minimum of 2.5 seconds. The sabot discards upon leaving the gun tube by aerodynamic and centrifugal forces. The projectile is fin stabilized in flight. In order that only minimal spin is imparted to the projectile when the obturator engages the gun tube rifling, the plastic seal under the obturator reduces the coefficient of friction, producing approximately 80 percent slippage. The core penetrates the target solely by kinetic energy.

Tabulated Data:

NOTE

Classified tabulated data has not been included in this change.

Complete round:
- Type ---------- APFSDS-T
- Weight ---------- 37.8 lb
- Length ---------- 35.75 in.
- Cannon used with -- M68

Projectile:
- Subprojectile material -------- Depleted uranium
- Sabot ---------- Aluminum
- Color ---------- Black w/white markings

Components
Cartridge case ---- M148A1B1
Propellant -------- M30
Primer ------------ M120
Tracer ------------ M13

Temperature Limits:

Firing:
Lower limit ------- -35°F (-37.2°C)
Upper limit ------- +125°F (+52.0°C)
Storage:
Lower limit ------- -70°F (-57.0°C)
Upper limit ------- +160°F (+71.1°C)

Packing ------------ 1 round per fiber container; 2 containers per wooden box

Packing Box:
Weight ------------ 140 lb
Dimensions -------- 47-7/16 x 13-5/16 x 7-1/16 in.
Volume ------------ 3.4 cu ft

NOTE

See SC for complete packing data including NSN's.

Shipping and Storage Data:

Storage class/SCG ----- (08) 1.2C
DOT shipping class ---- B
DOT designation ------- AMMUNITION FOR CANNON WITH SOLID PROJECTILES
DODAC ----------------- 1315-C523
Drawing number -------- 9329513

Limitations:

Projectile is not to be disposed of by burning or detonation.

The M774 is a full service round which may only be fired during war emergency. All peace time firings are prohibited except at times of NRC license and host nation agreement.

NOTE

Loss or unauthorized firings of the M774 must be reported to HQ, AMCCOM, within 24 hours of the discovery. Telephone reports should be followed with a written report to:

Commander
USA AMCCOM
ATTN: AMSMC-CG, Radiological Protection Officer (RPO)
Rock Island, IL 61299
Autovon: 793-2969/2964/2965/2966
Commercial: (309) 782-2969/2964/2965/2966

FTS: 367-2969/2964/2965
Non-duty, Post Operator:
Autovon: 793-1110
Commercial: (309) 782-6001
Ask for Staff Duty Officer

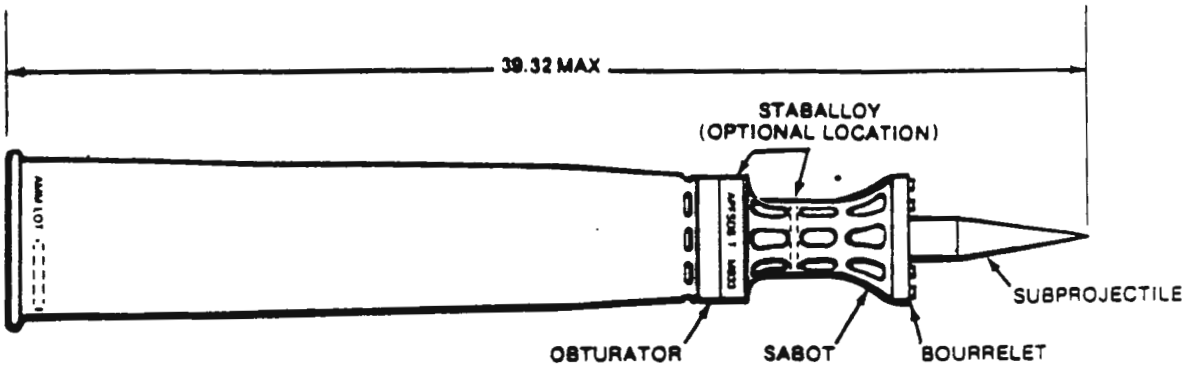
All transmissions regarding incidents of this nature must be classified at least CONFIDENTIAL.

The possession of the source material (Depleted Uranium) is licensed to HQ, AMCCOM, in accordance with Federal Law, Title 10, Code of Federal Regulations. The AMCCOM Commander (RPO) is responsible for the license compliance and personally accountable for the source material. Violations of this law may result in a personal fine or imprisonment. Failure to report a non-compliance is also punishable under federal law.

References:

SC 1305/30-IL
SB 700-20
DARCOM-P 700-3-3
TM 9-1300-251-20
TM 9-2350-215-10
TM 9-1300-251-34
TM 9-1300-250
TM 9-2350-257-10-2
TM 9-2350-253-10
TM 9-2350-255-10

CARTRIDGE, 105-MILLIMETER: APFSDS-T, M833



ARD 82-0326-A

TYPE CLASSIFICATION:

TC Std 7 Apr 83 by DA Letter.

USE:

This cartridge is an armor-piercing antitank cartridge and is intended for use on 105mm guns M68 cannon, against armored targets.

DESCRIPTION:

The projectile consists of a subprojectile and sabot. The subprojectile consists of a monolithic staballoy (depleted uranium) core, and is fitted with an aluminum windshield with steel tip to eliminate aerodynamic heating and an aluminum fin assembly. The aluminum sabot is composed of three 120° sections, which transfer momentum to the subprojectile through a series of mating buttress grooves. The sabot is an adaptation of the M735/M774 technology differing in design by the use of gussets in the sabot segments to retain strength and rigidity and reduce the weight. A steel bourrelet, containing three shear cuts, is screwed to the

sabot forward face. A two piece nylon obturator and polypropylene seal is assembled around the sabot, and a silicone rubber seal is applied over the rear face of the sabot. An M13 Tracer is assembled to the fin and is held in place by a threaded plug and disc assembly. The projectile is crimped to an M148A1B1 Cartridge Case, which holds approximately 12.8 pounds of M30 propellant, and is fitted with an M120 electric primer. A gun tube wear-reducing titaniumdioxide liner is assembled to the interior wall of the cartridge case.

FUNCTIONING:

During projectile flight, the tracer burns for a minimum of 2.5 seconds. The sabot discards upon leaving the gun tube by aerodynamic and centrifugal forces. The projectile is fin stabilized in flight. In order that only minimal spin is imparted to the projectile when the obturator engages the gun tube rifling, the plastic seal under the obturator reduces the coefficient of friction, producing approximately 80 percent slippage. The core penetrates the target solely by kinetic energy.

TABULATED DATA:

NOTE

Classified tabulated data has not been included in this change.

Complete round:

Type	APFSDS-T
Weight	38.2 lb (17.3 kg)
Length	39.32 in.
Cannon used	M68

Projectile:

Sabot	Aluminum
Subprojectile:	
Body material	Depleted uranium
Color	Black w/white markings

Components:

Cartridge case	M148A1B1
Propellant	M30
Primer	M120
Tracer	M13

TEMPERATURE LIMITS:

Firing:

Lower limit	-35°F (-37.2°C)
Upper limit	+125°F (+52.0°C)

Storage:

Lower limit	-50°F (-46°C)
Upper limit	+145°F (+62.8°C)

PACKING:

Alternate	1 round per fiber container, 2 containers per wooden box
Standard	1 round per metal container, 30 containers to a pallet

PACKING BOX:

Weight	124 lb
Dimensions	48-3/4 x 14-1/16 x 8-9/16 in.
Volume	3.3 cu ft

METAL CONTAINER:

Weight	0.67 lb
Dimensions	45.67 x 7.13 x 7.13
Volume	0.9 cu ft

NOTE

See SC for complete packing data including NSN's.

Shipping & Storage Data:

Quantity-Distance Class ---------- (08) 1.2
Storage Compatibility ---------- C
DOT Shipping Class ---------- B
DOT Designation ------ AMMUNITION FOR CANNON WITH SOLID PROJECTILES
DODAC ---------- 1315-C524
Drawing Number ---------- 9342932

Limitations:

Projectile is not to be disposed of by burning or detonation.

The XM833 is a full service round which may only be fired during war emergency. All peacetime firings are prohibited except at times of NRC license and host nation agreement.

Firing the M833 at Ammunition Temperatures above +125°F (+52.0°C) may result in excessive chamber pressures. Firing the M833 at the Ammunition Temperatures below -35°F (-37.2°C) may result in weapon damage.

NOTE

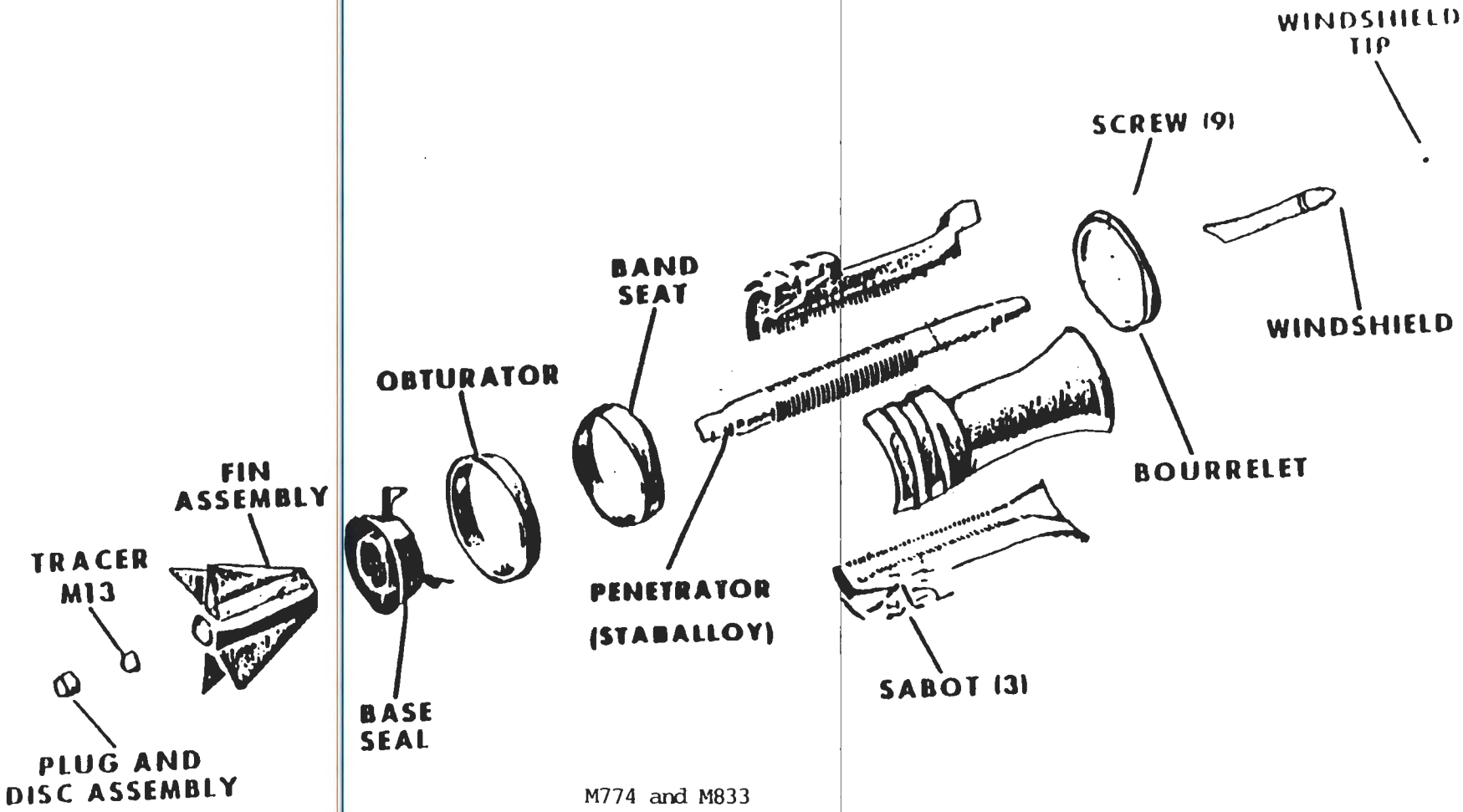
Loss or unauthorized firings of the M833 must be reported to HQ, AMCCOM RPO within 24 hours of the discovery. Telephone reports should be followed with a written report to:

Cdr USA AMCCOM
ATTN: AMSMC-CG/Radiological Protection Officer (RPO)
Rock Island, IL 61299
Autovon: 793-2969/2964/2965/2966
Commercial: (309) 782-2969/2964/2965/2966
FTS: 367-2969/2964/2965
Non-duty, Post Operator:
Autovon: 793-1110
Commercial: (309) 782-6001
Ask for Staff Duty Officer

All transmissions regarding incidents of this nature must be classified at least confidential. The possession of the source material (Depleted Uranium) is licensed to HQ, AMCCOM, in accordance with Federal Law, Title 10, Code of Federal Regulations. The AMCCOM Commander (Radiological Protection Officer) is responsible for the license compliance and personally accountable for the source material. Violations of this law may result in a personal fine or imprisonment. Failure to report a non-compliance is also punishable under Federal Law.

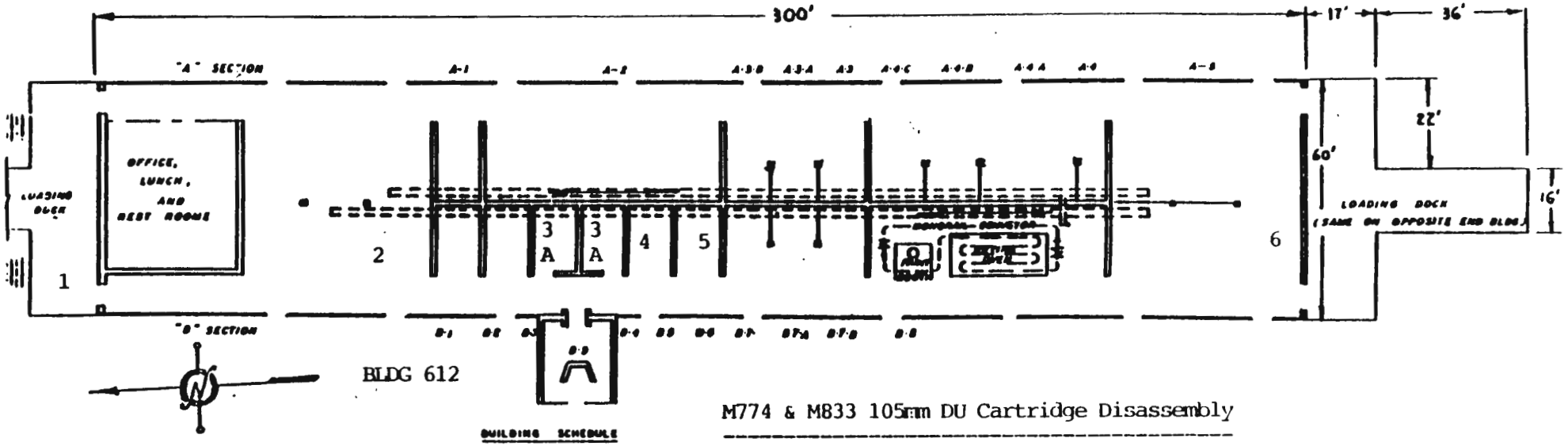
REFERENCES:

SC 1305-30-IL
SB 700-20
DARCOM-P 700-3-3
TM 9-1300-250
TM 9-1300-251-20
TM 9-1300-251-34
TM 9-2350-215-10
TM 9-2350-255-10-3
TM 9-2350-257-10-3



M774 and M833

Enclosure 14 to Supplement 2



M774 & M833 105mm DU Cartridge Disassembly

1 Receive Ammunition

2 Unpack Ammunition

3 Seperate Projectile from Cartridge Case Using APE 1001

4 Pack Projectiles Tracers Removed

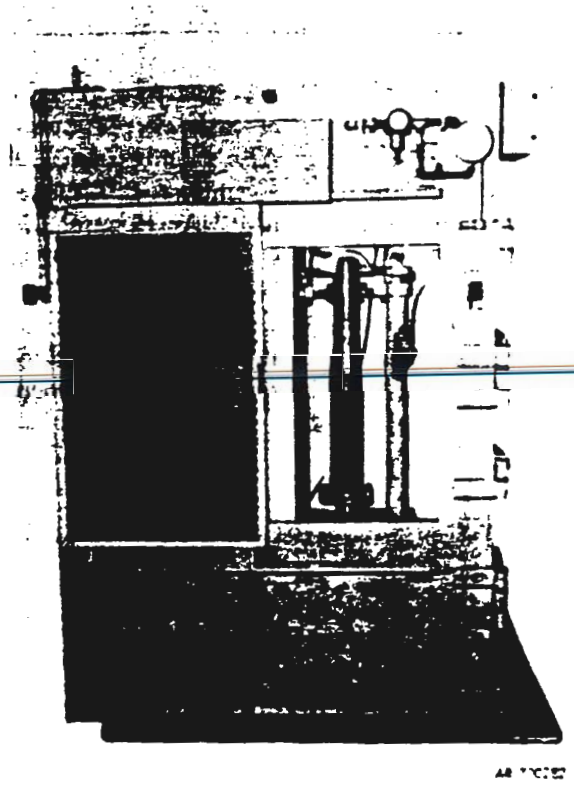
5 Pack Cartridge Cases

6 Outload Processed Amunition

A APE 1001*

* Air Monitors @ Each Machine

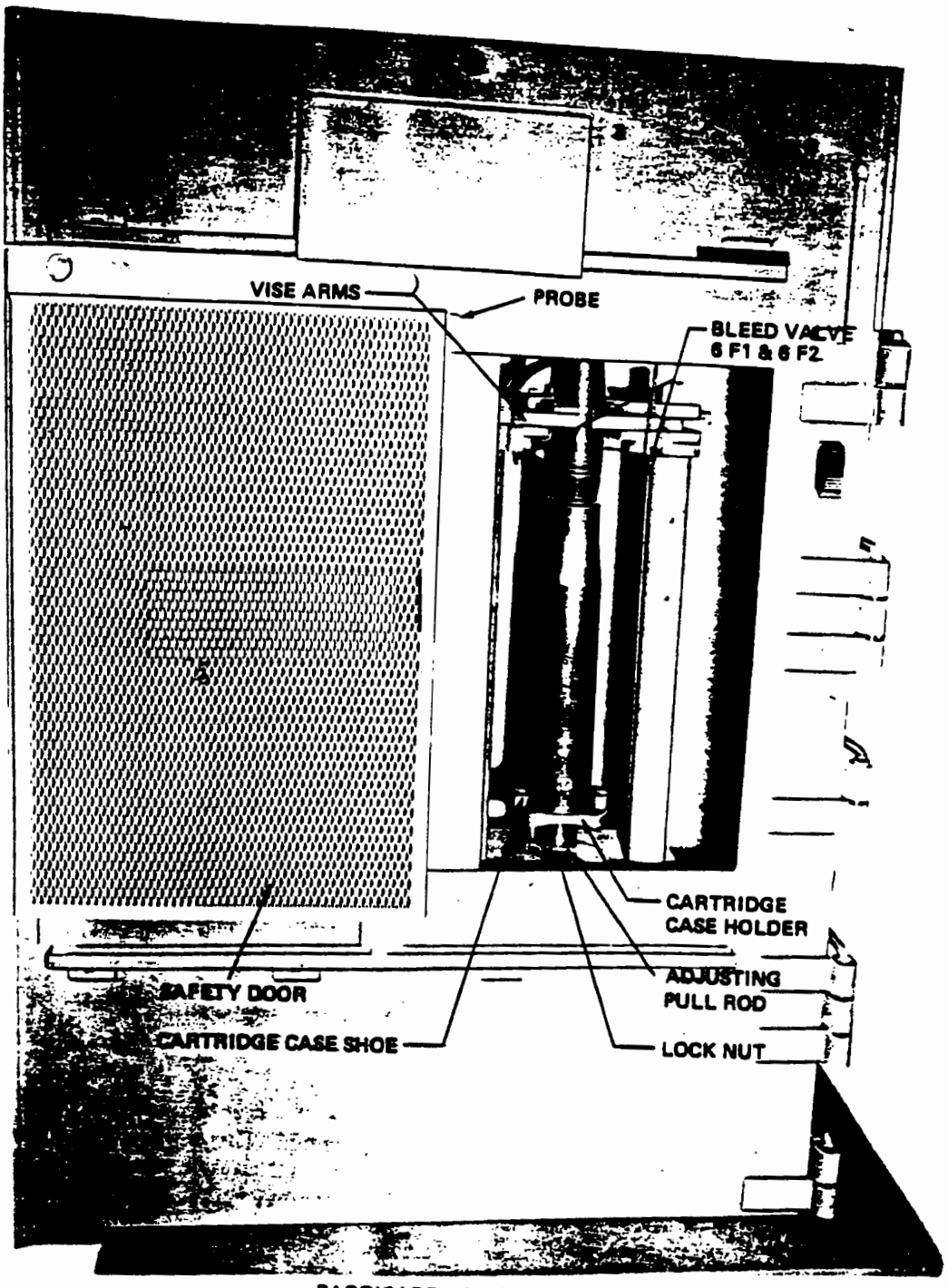
APE 1001M1--MACHINE, VERTICAL PULL APART



Use:
The vertical pull apart machine is a semiautomatic multipurpose machine used for processing 37MM through 106MM fixed artillery ammunition, Navy ammunition, 76mm/62, 3"/50, 5"/38, 5"/54, 6"/47 and rocket motors. It performs the following operations:

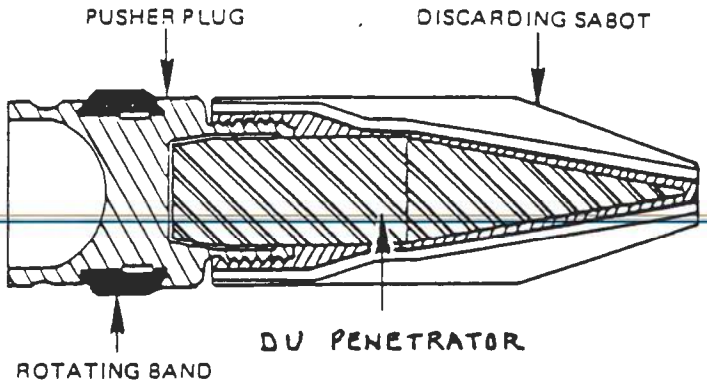
a. Separate projectile from cartridge case.
b. Resize cartridge case mouth.
c. Assemble projectile to cartridge case.
d. Calibrate the pounds of pull required to separate the projectile from the cartridge case.
e. Crimp the cartridge case to the projectile.
f. Prime and deprime cartridge cases with press type primers.
g. Continuity test 2.75-inch and 3.5-inch rocket motors.

Description:
The vertical pull apart machine is constructed with a base plate, operating table, three bolster rods, vise assembly, pull cylinder, and fulcrum arm assembly. The machine is powered by air. An operational shield is provided to protect the operator. Some shields are supplied with an installed deluge system.

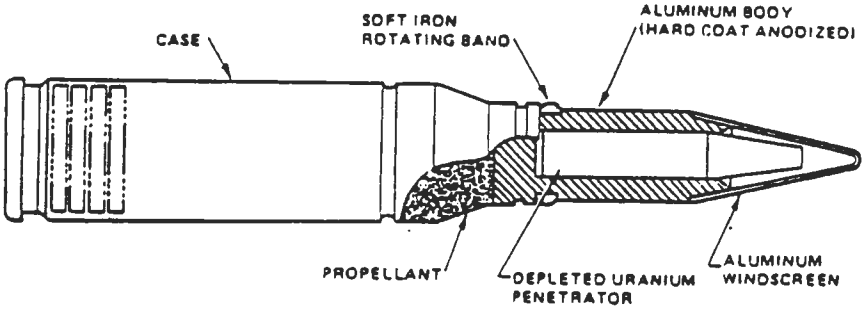


BARRICADE & MACHINE

Enclosure 17 to Supplement 2

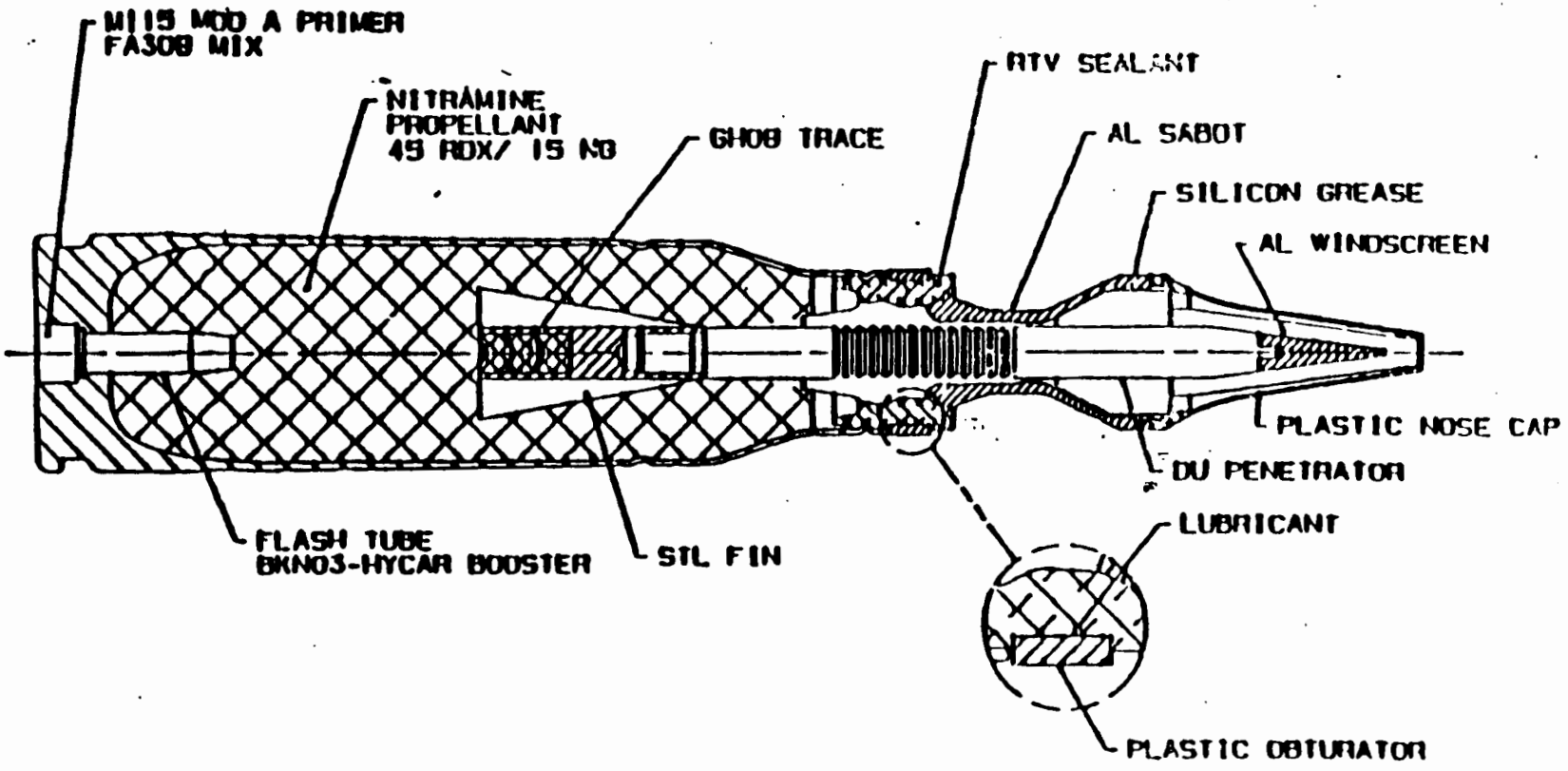


PROJECTILE OF 20MM DU CARTRIDGE.



25MM PGU-20/U CARTRIDGE.

M919 CARTRIDGE



Enclosure 19 to Supplement 2

SUPPLEMENT 3
Reference NRC Form 313, Block 7

INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE:

1. General.

a. The Radiological Protection Officer (RPO) is Michael R. Lewis. The alternate Radiological Protection Officer is Thomas J. Stincic. First line supervisors for Depleted Uranium ammunition operations, first line supervisors for Directorate of Product Assurance and first line supervisors for decontamination operations are given annual training.

2. Type of training.

a. Principles and practices of radiation protection. (A)

b. Radioactivity measurement standardization, monitoring techniques, and instruments. (B)

c. Mathematics and calculations basic to the use and measurements of radioactivity. (C)

d. Biological effects of radiation. (D)

e. Safety practices applicable to the protection from radiation, chemical toxicity, pyrophoric property, and explosive property of source materials. (E)

3. Format of training and experience.

a. Name.

b. Type of training.

c. Course and location.

d. Duration and year.

e. On-the-job-training. (OJT)

f. Formal training.

g. Experience.

4. Michael R. Lewis Radiation Protection Officer

a. Training.

Type	Course/Location	Duration	OJT	Formal
A,B,C,D	Alpha Team Operations Savanna Army Depot Savanna, IL	2 weeks 1-12 Aug 77	Yes	Yes
A,B,C,D	NETEX Defense Nuclear Agency Kirkland AFB, NM	1 week 7-11 May 79	Yes	Yes
A,B,C,D	NETEX Defense Nuclear Agency Kirkland AFB, NM	1 week 16-20 Jun 80	Yes	Yes
A,B,C,D	Radiological Safety Ft. McClellan, AL	3 weeks 21 Jan-10 Feb 81	Yes	Yes
A,B,C,D,E	DU Safety Course Ft. Belvoir, VA	1 week 5-9 Mar 84	No	Yes
A,B,C,D	Occupational Radiation Safety, Ft. Belvoir, VA	2 weeks 9-20 Jul 84	No	Yes
A,C	Chemical Nuclear Systems Inc, Seminar, Columbia, SC	1 week 22-26 Apr 85	No	Yes
A,C	Chemical Nuclear Systems Inc, Seminar, Columbia, SC	1 week 20-24 Jul 87	No	Yes
A,C	Computer Based Occuptional Radiation Protection Ft. Belvoir, VA	1 week 24-28 Jul 89	No	Yes
A,C	US Army Radiological Bioassey and Dosimetry: RBD Software Ft. Belvoir, VA	1 week 17-21 Jun 91	No	Yes
B,C	Health Physics, Instrumentation and Air Sampling for Radioactive Materials Ft. Belvoir, VA	1 week 27-31 Jul 92	No	Yes

b. Experience

Activity	Site	Duration	Responsibility
SW Munitions Storage Check Sources:Am241 .1uCi,Th230 .01uCi, Cs137 1uCi,Kr85 5mCi	Seneca Army Depot	Aug 77 - May 80	Alpha Team Member (Radiation Accident Reponse Team)
Depleted Uranium Storage 0-1300 Ci	Seneca Army Depot	Feb 81 - Feb 91	Alternate Radiation Protection Officer

Depleted Uranium Storage 0-1300 Ci	Seneca Army Depot	Feb 91 - Present	Radiation Protection Officer

5. Thomas J. Stincic Alternate Radiation Protection Officer

a. Training.

Type	Course/Location	Duration	OJT	Formal
A,B,C,D	Alpha Team Operations Savanna Army Depot Savanna, IL	2 weeks 1-12 Aug 77	Yes	Yes
A,B	AMC Ammunition School Seneca Army Depot Romulus, NY	2 days 16-17 Feb 78	No	Yes
A,B,C,D	Health Physics & Radiation Accidents Oak Ridge Assoc. Universities Oak Ridge, TN	1 week 23-27 Jan 78	Yes	Yes
A	NUWAX-79 Defense Nuclear Agency/DOE, Nevada Test Site, NV	3 days 18-20 Apr 79	Yes	No
A,B,C,D	NETEX Defense Nuclear Agency Kirkland AFB, NM	1 week 16-20 Jul 79	Yes	Yes
A,B,C,D,E	Instrumentation Eberline Corp. Santa Fe, NM	1 week 7-11 Apr 80	Yes	Yes
A,B,C,D	Radiation Safety by Leo Foley, Field Safety Activity Romulus, NY	2 weeks 10-21 Aug 81	No	Yes
A,B,C,D	Radiation Safety by Thomas Grucci, Romulus, NY	2 weeks Oct 81	No	Yes
A,B,D	RMC Technical Svcs Ft. Belvoir, VA	1 week 9-13 Jun 84	No	Yes
A,B,C,D,E	DU Safety Course Ft. Belvoir	1 week 5-9 Mar 84	No	Yes
A,B,C,D	Occupational Radiation Safety, Ft. Belvoir, VA	2 weeks 9-20 Jul 84	No	Yes
A,B,D	Trans. Radioactive Mat. Ft. Belvoir, VA	1 week 14-18 Jan 85	No	Yes
A,B,C,D	Radiation Dosimetry and Measurement Ft. Belvoir, VA	1 week 9-13 Mar 87	No	Yes

A,C	Computer Based Occuptional Radiation Protection Ft. Belvoir, VA	1 week 24-28 Jul 89	No	Yes

b. Experience.

Activity	Site	Duration	Responsibility
SW Munitions Storage Check Sources: Am241 .1uCi,Th230 .01uCi, Cs137 1uCi, Kr85 5mCi	Seneca Army Depot	2 Years	Alpha Team Chief (Radiation Accident Response Team)
Depleted Uranium Storage 0-1300 Ci	Seneca Army Depot	Jul 80 - Present	Radiation Safety
Radioactive Source Set M3A1: Am241 300uCi per set	Seneca Army Depot	Jul 80 - Present	Radiation Safety
Radiac Calibrator AN/UDM-6 Pu289 1.4uCi	Seneca Army Depot	Jul 80 - Present	Radiation Safety
Columbite Concentrate Storage 1400 Tons Unknown Ci content	Seneca Army Depot	Jul 80 - Present	Radiation Safety
Radiac Calibrator UDM-2 Sr90 180 mCi	Seneca Army Depot	Jul 80 - Present	Radiation Safety
Radiological Decontamination of Pitchblende Ore Unknown Ci content	Seneca Army Depot	Jul 85	Radiation Safety

6. John Hennessey, Edward Mitchell, and Phillip Wilkie. First Line Supervisors Ammunitions Operations

a. Training

Type	Course/Location	Duration	OJT	Formal
A,B,C,D,E	DU Safety Course Ft. Belvoir, VA	5-9 Mar 84	Yes	Yes

SUPPLEMENT 4
Reference NRC Form 313, Block 8

TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

SECTION I. TRAINING OUTLINE.

1. Types of Radiation.

   a. Alpha.
   b. Beta.
   c. Gamma.
   d. X-rays.
   e. Neutron.

2. Units of Radiation.

   a. RAD (absorbed dose).
   b. REM (dose equivalent).

3. Biological Effects.

   a. Acute.
   b. Chronic.
   c. Video Presentation. (1 1/2 hour)

4. ALARA-(As Low As Is Reasonable Achievable).

   a. Exposure Limits.
      (1) General Public.
      (2) Prenatal.
      (3) History at Seneca Army Depot.

   b. Protective Measures.
      (1) Time.
      (2) Distance.
      (3) Shielding.

   c. Dosimetry.
      (1) Types: Body, Wrist, Ring, Bioassay.
      (2) Storage.
      (3) When needed.
      (4) Medical Documentation.
      (5) DD Form 1952.
      (6) Reviewed by RPO, Ionizing Radiation Control Committee and Depot Doctor.

   d. Surveys.
      (1) Pre-operational Background.
      (2) Monitoring.
      (3) Equipment.
      (4) Types.

e. Personal Hygiene.
   (1) Wash prior to eating, drinking, smoking, etc.
   (2) No eating, drinking, etc in Radiation Areas.
   (3) No food storage in Radiation Areas.
   (4) Wounds covered.

f. Protective Clothing and Equipment.
   (1) Need, Use, Approval.
   (2) Replacement and Disposal.
   (3) Types.
   (4) Cleaning (Contaminated).

g. Restrictive Area Signs -(Caution Radioactive Material).
   (1) Caution Radioactive Material(s).
   (2) Caution, Radiation Area.
   (3) Caution, High Radiation Area.
   (4) Caution, Airborne Radioactivity Area.

5. Depleted Uranium-(DU) 30mm Under This License.

   a. Description.
      (1) Dense Solid Metallic Alloy.
      (2) Heavy Metal Poison Hazard.
      (3) Explosive as a Munition.
      (4) Low Radioactivity.
      (5) Internal and External Hazards.
      (6) Can Not Under This License Be Physically Altered

6. Depleted Uranium (DU) - Other Munitions Held at Seneca Army Depot.

   a. Description.
      (1) 20mm .
      (2) 25mm .
      (3) 105mm.
      (4) 120mm.

   b. Hazards - See Supplement 4, Section I paragraph 5, (1) to (5)

7. Decontamination

   a. Protective Measures Radiation
   b. Protective Measures General Safety
   c. Dosimetry
      (1) TLDs, Whole Body Wrist, and Ring
      (2) Need for Bioassay
      (3) Annual Briefing
      (4) Reviewed by RPO, Ionizing Radiation Control Committee and Depot Doctor
      (5) ALARA
      (6) Waste Disposal

8. Regulatory Requirements.

   a. Title 10 Code of Federal Regulation (CFR) - Parts 19,20,21,40,71

   b. NRC Guides as Handouts.
      (1) 8.13 INSTRUCTION CONCERNING PRENATAL RADIATION EXPOSURE
      (2) 8.29 INSTRUCTION CONCERNING RISKS FROM OCCUPATIONAL RADIATION EXPOSURE

   c. NRC Information Notice 92-37: IMPLEMENTATION OF THE DELIBERATE MISCONDUCT RULE

   d. Army Regulations.
      (1) AR 40-5, Preventive Medicine.
      (2) AR 40-14, Control and Recording Procedures for the Exposure to to Ionizing Radiation and Radioactive Materials.
      (3) AR 385-11, Ionizing Radiation Protection (Licensing, Control, Transporation, Disposal, and Radiation Safety).

9. Seneca Army Depot NRC License SUC-1275.
   a. Quantity Limits.
   b. Munitions Licensed.
   c. Individual(s) Responsible.
   d. Licensed Operations.
   e. Radiation Safety Program.

10. Department of Transportation Exemptions

11. Waste Management.
   a. Types, Storage, Disposal.
   b. Demilitarization Waste.
   c. Decontamination Waste.

11. Standing Operating Procedures for Operations.

   a. Normal Procedures.
      (1) Explosive Safety.
      (2) Industrial Safety.
      (3) Industrial Hygiene.
      (4) Radiation Safety.
      (5) General Safety
      (6) NRC Requirements

   b. Emergency Procedures.
      (1) Accident - Stand Upwind.
      (2) MET-L-X extinguisher.
      (3) Fire - Fight only incipient fires.
      (4) Evacuate upwind.

   c. Reporting Unsafe Acts/Conditions.
      (1) Employees.
      (2) Supervisors.
      (3) Safety Office/RPO.
      (4) NRC

12. Safe Use of Radioactive Material.

13. General Safety

SECTION II. DURATION AND FREQUENCY OF TRAINING.

1. Training and testing will be commensurate with potential radiological health hazards in the restricted area.

2. Initial training will last approximately two to four hours.

3. Annual refresher training lasting one hour will be performed.

SECTION III. TESTING

1. Following training, testing will be performed to test workers knowledge. See Supplement 4, page 4-5 for an example and page 4-7 for answers.

SECTION IV. TRAINING RECORDS.

1. Results of testing will be maintained in the Safety Office and record of training will be held in the Official Personnel File for each individual involved.

SECTION V. INDIVIDUALS RESPONSIBLE FOR TRAINING

1. Training will be conducted by the Radiation Protection Officer or Alternate Radiation Protection Officer. (See Supplement 3 for qualifications) Alternately, training will be provided by individuals designated by the RPO.

DU Test

Name _____ Date _____

1. What should you do if you see an incipient fire involving DU ammunition?

   A. Sound Alarm.
   B. Try to extinguish with approved MET-L-X extinguisher.
   C. Evacuate 2000 feet upwind.
   D. All of the above.

2. DU stands for?

   A. Demilitarized units.
   B. Depleted uranium.
   C. Displaced urbanites.
   D. Discolored uranic-acid.

3. There is an NRC requirement to report any condition which may lead to or cause a violation of NRC regulations.

   A. True.
   B. False.

4. What is the approved fire extinguisher for DU?

   A. Dry chemical.
   B. Mitee Minie Wet Metal Blanket.
   C. Light Water.
   D. Carbon dioxide.
   E. MET-L-X.

5. Whole body radiation exposure is detected using:

   A. Air swipes.
   B. Health Clinic X-ray machine.
   C. Thermoluminescent dosimeters (TLDs) when required.
   D. Blood pressure.

6. Define ALARA. _____

   _____

7. You can keep your exposure to a minimum by:

   A. Work quickly.
   B. Staying around containers only as long as necessary.
   C. Keeping one meter from containers when possible.
   D. All of the above.

8. If you see an NRC inspector making an official inspection, you may not talk with him or her?

   A. True.
   B. False.

9. DU, as used on this depot, is:

   A. Used at the rifle range for test firings.
   B. A ammunition components.
   C. Held for the public pending release documents.
   D. Used for reactor fuel stockpile.

10. The worst hazard associated with a normal DU ammunition operation is:

   A. Explosive.
   B. Fellow workers.
   C. Beta radiation.
   D. Gamma radiation.

11. People are exposed to radiation from:

   A. Radon gas.
   B. Medical X-rays.
   C. Food and water.
   D. All of the above.

12. The best method for determining DU contamination is:

   A. Specially trained dogs.
   B. Litmus paper.
   C. Swipe tests.
   D. The blue glow when the lights are out.

13. Personal dosimetry records may be seen by the exposed individual:

   A. Never.
   B. Only under a doctor's orders.
   C. When directed by a state court or higher.
   D. When authorized by the Radiation Protection Officer.
   E. When the individual wishes.

14. If you believe that a violation of NRC rules and regulations or of Seneca Army Depot's NRC License has occurred with regard to radiological working conditions, you may request an inspection by giving notice of the alleged violation to the NRC.

   A. True.
   B. False.

15. When DU is involved in a fire the most dangerous place is:

   A. Upwind.
   B. Post 7.
   C. Emergency Operations Center.
   D. In the smoke plume.
   E. On the igloo roof.

Answers to Sample Test for Restricted Area Workers:

1. D.
2. B.
3. A.
4. E.
5. C.
6. AS LOW AS REASONABLY ACHIEVABLE.
7. D.
8. B.
9. B.
10. A.
11. D.
12. C.
13. E.
14. A.
15. D.

SUPPLEMENT 5
Reference NRC Form 313, Block 9

FACILITIES AND EQUIPMENT

1. Location

a. Seneca Army Depot is located in the heart of Central New York State's Finger Lakes Region directly between Rochester and Syracuse. It is part of a nation wide network of installations, subinstallations, and separate units that comprise the U.S. Army Material Command (AMC). The depot covers approximately 11,000 acres. The depot performs renovation (maintenance), and inspection on most conventional ammunition items such as high explosive projectiles, illuminating projectiles,land-minds, small arms, propelling charges and 30mm non DU cartridges. As an ammunition depot, access to the depot is restricted and access to the ammunition storage and ammunition maintenance areas are restricted further.

2. Ammunition Facilities

a. Storage of 30mm DU cartridges as well as other DU cartridges will be stored in earth covered concrete igloo type magazines. The igloos are designed for the storage of ammunition items. The positioning of the igloos within a storage block is designed to prevent sympathetic detonation from one igloo to another. Igloos will be properly posted in accordance with 10 CFR 20.203 and subsequent regulations.

b. Inspection and maintenance does not require the cartridges to be disassembled. Since DU cartridges will not be involved in operations producing fumes, dusts, mists, or gases, special ventilation systems or special radiological facilities will not be required. Inspection and maintenance will be performed in building designed for ammunition operations. When DU is present the buildings will be properly posted in accordance with 10 CFR 20.203 and subsequent regulations.

c. Demilitarization will be performed in building 612. Building 612 is designed for ammunition operations. It is 1350 feet from the nearest boundary. The floor is sealed to facilitate cleaning up of explosive material if spilled. The building is covered by lighting protection which is tested for grounding adequacy as required per current regulations. See Enclosure 1 to Supplement 5 for building layout. When DU is present in building 612 it will be properly posted in accordance with 10 CFR 20.203 and subsequent regulations. Prior to start up of demilitarization of any cartridge listed in this license a detailed background survey will be made.

d. Decontamination will be performed in building 819. Building 819 is designed for mechanical operations, having a 10 ton overhead hoist on mono-rails. The building is approximately 2000 feet from igloos and administrative buildings. Prior to start up of decontamination operations a detailed radiological survey will be made of the building. When DU is present in the building it will be properly posted in accordance with 10 CFR 20.203 and subsequent regulations.

3. Equipment

a. The following radic equipment, or its equivalent, is available to facilities for routine and emergency use:

Type Instrument	Number Available	Radiation Detected	Sensitivity Range
Ludlum Model 19	2	gamma	0-5000 uR/hr
Ludlum Model 3 1 mg/cm2	14	alpha	0-500000 cpm
Ludlum Model 3 1.5-2 mg/cm2	14	beta/gamma	0-200 mR/hr
Ludlum Model 2220 Radaicmeters	8	5 ea. Fidler Probe 5 ea. SPA 3 Probes 6 ea. PG2 Probes	

b. The folowing laboratory equipment, or its equivalent, is available to facitities for low level counting:

Type Instrument	Number Available	Radiation Detected	Sensitivity Range
Nuclear Measurements Corp PC-5 Counter 0.9 mg/cm2	2	alpha/beta	7-10 cpm
Beckman LS-6000-IC Liquid Scintillation Counter	1	alpha/beta	2-20 cpm
Eberline BC-4	1	beta	
Eberline SAC-4	1	alpha	

c. Instrumentation used for surveys and monitoring are calibrated at least yearly and after every repair. Calibration services are performed bt the U.S. Army Test, Measurement and Diagnostic Support Center using standard calibration procedures with the sources traceable to the National Institute of Standards and Technology. Records showing calibration will be kept for two years. Laboratory equipment will have a Quality Assurance program using sources traceable to the National Institute of Standards and Technology. Quality Assurance program records will be kept for two years.

d. The U.S. Army Ionizing Radiation Dosimetry Center accredited by yhe National Voluntry Laboratory Accreditation Program will analyze the Thermoluminescene Dosimetry (TLD) badges quarterly. Bioassays will be performed by U.S. Army Enviromental Hygiene Agency.

e. Met-L-X fire extringuishers will be present during all operations involving DU ammunition. Depot fire fighters have protective clothing and self contained breathing apparatus.

f. Demilitarization exposes personnel to explosive material. The following equipment personnal protective equipment will be utilized for portions of the demilitarization process: approved full face respirators, gloves, headcovering, conductive soled shoes, face shields, and explosive handlers coveralls.

SUPPLEMENT 6
Reference NRC Form 313, Block 10

RADIATION SAFETY PROGRAM:

1. Purpose.

a. The purpose of this program is to establish procedures to protect the health of personnel, minimize risk to personnel and property, and make every reasonable effort to maintain radiation exposure as low as reasonable achievable.

2. Scope.

a. This program is applicable to the transportation, storage, shipment, maintenance, inspection, decontamination, demilitarization, and disposal of all NRC licensed material at Seneca Army Depot to include tenant activities.

3. Policy.

a. Seneca Army Depot will provide a safe, healthful working environment for all employees. All Department of Army regulations, Department of Transportation, and Nuclear Regulatory Commission (NRC) rules will be followed.

4. Responsibilities of the Commander.

a. The Commander at Seneca Army Depot has overall responsibility for the radiation safety of all individuals who work in or frequent restricted areas under his or her control. The Commander is responsible for overall state of compliance with applicable NRC regulations and terms of this license. The Commander will designate in writing an Radiation Protection Officer (RPO) and one or more alternate RPOs.

5. Responsibilities of the Radiation Protection Officer.

a. The Radiation Protection Officer is responsible for all aspects of radiological protection during the storage, handling, maintenance,disposition, decontamination, demilitarization, and shipment of radioactive material.

b. The RPO is responsible for Annual training for all individuals who work with DU cartridges to include biological effects of radiation.

c. The RPO will keep the Commander and other Seneca Army Depot organizations informed of any incident that occurs locally.

d. Annual training for all individuals who perform demilitarization and decontamination to include biological effects of radiation is the responsiblility of the RPO.

6. Responsibilities of Supervisors.

a. Assuring that their personnel have received adequate instruction prior to being exposed to radiation.

b. Supervisors will prepare, prior to the start of any operation involving radioactive material or possible exposure to radiation, a standing operating procedure to include emergency procedures for review by the RPO. This includes day-to-day supervision to insure that personnel working are complying with designed safety measures and reporting unsafe acts or conditions to management.

7. Responsibilities of Workers.

a. Knowing and following standing operating procedures, rules, and instructions.

b. Workers are responsible for properly using safety equipment and personnel protective equipment if required.

c. Worker will report to their supervisor, any accident, unusual incident, personal injury (however slight), suspected over-exposure and/or suspected internal exposure, as soon as possible after the occurrence.

8. Ionizing Radiation Control Committee (IRCC)

a. The IRCC is an advisory body appointed under a charter to the commander in fulfilling his or her responsibilities. The committee will consist of:

(1) Commander

(2) Radiation Protection Officer

(3) Medical Officer

(4) Safety Manager

(5) Representatives of employee organizations

(6) Ammunition Division

(7) Other personnel knowledgeable in radiation safety

b. The committee will establish local rules and precedures for procurement storage and safe use of radiation sources.

c. The committee will review proposals to use or procure radioactive items, such as SOPs and applications for licenses and authorizations.

d. The committee will study reports of incidents and adverse findings.

e. The committee will make recommendations for improvements.

f. The IRCC will meet atleast quarterly.

9. Radiation Safety Program Elements.

a. The following tasks are essential elements of the Radiation Safety Program.

(1) Providing training for personnel who work in or frequent restricted areas.

(2) Developing and implementing procedures for routine and emergency response operations involving licensed radioactive material.

(3) Providing radiological monitoring for personnel

(4) Select and evaluating facilities and equipment for radiological operations.

(5) Controling contamination and exposure to radioactive materials.

(6) Complying with all NRC licenses applicable to Seneca Army Depot.

(7) Assuring inventory control of licensed material.

(8) Conducting investigations of radiological incidents or accidents and reporting them as required by Army and federal regulations.

(9) Ensuring that ALARA is the guiding principle in radiological operations.

(10) Performing radiological surveys.

b. Annual audits and evaluations of the effectiveness of the Radiation Safety Program. This will usually be performed by higher headquarters as a part of the Combined Radiation Protection Survey Program.

10. Radiological Monitoring Procedures.

a. Surveys for DU munitions storage areas will be as follows:

(1) Surveys will be performed annually.

(2) Surveys will consist of swipes and monitoring.

(3) Documentation will consist of a drawing or diagram of the facility, the instrument used, the calibration due date of the instrument, results and the individual(s) performing the survey, and the date of the survey.

(4) Records will be kept on file in the Safety Office.

b. Transportation surveys will consist of the following.

(1) DU received will be surveyed in accordance with the requirements of 10 CFR 20.205 and subsequent regulations.

(2) DU munitions shipped will comply with 49 CFR and DOT Exemption E-9649, as appropriate.

(3) Transportation of DU resulting from demilitarization and decontamination will comply with 49 CFR.

c. Inspection and maintenance areas surveys will consist of the following.

(1) Normally, Inspection and maintenance does not expose bare DU. The frequency of area surveys will be as determined by the RPO but not less than quarterly.

(2) Surveys will consist of swipes and monitoring.

(3) Documentation will be in accordance with Supplement 6, paragraph 10a(3).

(4) Records will be kept on file in the Safety Office.

d. Demilitarization area surveys will consist of, as a minimum the following:

(1) DU from demilitarized cartridges may or may not expose bare DU depending on type of cartridge. The frequency of area surveys will be as shown in Table 6-1.

(2) Surveys will consist of swipes and monitoring.

(3) Air sampling will be performed at the separation point on the APE 1001 and APE 2214, except for 30mm PGU-14 series, 25mm PGU-20 series, and 20mm MK149, see Table 6-1.

(4) Documentation will be in accordance with Supplement 6, paragraph 10a(3).

(5) Records will be kept on file in the Safety Office.

e. Surveys in the storage area for industrial machinery and equipment will consist of, as a minimum the following.

(1) The frequency of the survey will be monthly.

(2) Surveys will consist of swipes and monitoring.

(3) Documentation will be in accordance with Supplement 6, paragraph 10a(3).

(4) Records will be keep on file in the Safety Office.

f. Industrial machinery and equipment decontamination area surveys will consist as a minimum the following:

(1) Due to the size of and type of industrial machinery and equipment and the method used to decontaminate, the frequency of area surveys will be as listed in Table 6-2.

(2) Surveys will consist of swipes and monitoring.

(3) Air sampling will be required for decontamination. See Enclosure 1 to Supplement 6 and Table 6-2.

(4) Documentation will be in accordance with Supplement 6, paragraph 10a(3).

(5) Records will be kept on file in the Safety Office.

g. Surveys in each area will of a sufficient number to evaluate the extent of radiation hazard present and shall be 100 cm2.

11. Personnel Surveys.

a. Personnel involved in transportation and storage operations will not normally be in contact with open containers of DU. Monitoring of their person will not normally be performed.

b. Personnel involved in inspection or maintenance of DU cartridges will monitor their hands upon leaving the work area with calibrtated hand held survey instruments, if readings are over background, decontamination will be performed.

c. Personnel engaged in demilitarization will have their hands and feet monitored upon leaving the work area with calibrated hand held survey instruments, if readings are over background, decontamination will be performed. Additionally, any protective clothing shall be monitored, if background or below clothing will be released to normal laundry, if contaminated it will be sent to a licensed nuclear laundry. Monitoring will be with calibrated hand held survey instruments.

d. Personnel engaged in decontamination of industrial machinery and equipment have their hands and feet monitored upon leaving Clean Area for Personnel Room building 819, with hand held calibrated survey instruments, if reading are over background decontamination will be performed. No protective clothing will be removed from the decontamination facility.

12. Personnel Dosimetry (Thermoluminescence Dosimetry (TLD) Badges).

a. Past TLD history at Seneca Army Depot indicates that TLDs are not required for personnel involved in storage, shipping, receiving, and inspection. Any change major in operations would require further analysis.

b. TLDs will be worn by personnel involved in demilitarization; whole body for all personnel and whole body and wrist badges for personnel who directly handle DU components.

c. TLDs both whole body and ring badges, will be worn by personnel involved in decontamination operations.

d. Any personnel who may receive a dose equivalent in excess of 10 percent of the applicable standard in 10 CFR 20 will wear a TLD.

e. The U.S. Army Ionizing Radiation Dosimetry Center accredited by the National Voluntary Laboratory Accreditation Program will analyze the TLDs quarterly.

f. The results of any exposure to radiation or radioactive material shown in dosimetry or bioassy records will be given at least annually to workers.

13. Bioassay.

a. Personnel involved in maintenance, inspection, shipping, receiving, and storage will not normally be given bioassys as no exposure to bare DU will occur.

b. A baseline bioassay will be given to all demilitarization workers and one every 6 months thereafter until the job is complete. The length of a particular demilitarization job would be determined by the quantity of cartridges.

c. A baseline bioassay will be given to all decontamination workers and one every 6 months there after.

14. Respiratory Protection.

a. Seneca Army Depot will use procedures or other engineering controls to the extent practicable to limit concentrations of airborne radioactive materials.

b. The Installation Respiratory Protection Director assigned by written orders is responsible for performing respiratory fit testing, employee training, records, and evaluating the program for overall effectiveness.

c. Only equipment certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA) will be used.

d. Air sampling sufficient to identify the hazard will be performed for operations in which airborne radioactive material may be possible. Certain operations in demilitarization and decontamination where bare DU is involved will require air monitoring. Air sampling devices with filter media that are 99% efficient for collecting particles with a diameter greater than 0.3 micrometer will be used.

e. Physicals will be given prior to initial use and fit testing will be performed at least annually.

f. The SOPs will contain instructions for normal usage of respirators and procedures to follow in the event of equipment malfunction, psychological distress, or deterioration of working conditions.

g. Respirators will be required for demilitarization in the bays containing the APE 1001 and APE 2214 (except for 30mm,20mm and 25mmPGU-20) because of loose explosive powder and as a precaution for the unlikely event of airborne radioactive material.

h. Air supplied respirators will be required for decontamination of industrial machinery and equipmment.

15. Radiological Emergency Response (Accidents and Incidents).

a. Seneca Army Depot Disaster Control Plan (SENECA-DCP) contains written radiological emergency response procedures for Seneca Army Depot. The following information, as a minimum, will be contained in SENECA-DCP.

b. *DU ammunition fire.* Personnel discovering a fire involving DU or DU material shall first give alarm and then attempt to extinguish the blaze (using MET-L-X extinguishers only) if it is very small. Alarm will be given by telephoning 117. Give the information in paragraph 14f below. All personnel not directly involved in the initial fire fighting efforts will be evacuated at least 2000 feet upwind of the scene. Unprotected personnel downwind shall be evacuated or shall be told to remain indoors with windows and doors closed. The decision to fight the fire, maintain fire fighting efforts, or withdraw is a judgment to be made by the senior person present.

c. Radioactive check sources. Personnel discovering a fire involving a radioactive check source shall first give the alarm and then attempt to extinguish the fire if it is very small. Alarm will be given by telephone, dialing 117 and giving the information in paragraph 14f below. All personnel not directly involved in the fire fighting will be evacuated to at least 2000 feet upwind of the scene. Unprotected personnel downwind will be told to remain indoors with the doors and windows closed. The decision to fight the fire, maintain fire fighting efforts, or withdraw is a judgment to be made by the senior person present.

d. Vehicle accident. In the event a vehicle carrying radioactive material is involved in an accident, the driver will immediately notify the Security Police, at extension 117, and their supervisor. The driver should then attempt to position the vehicle away from normal flow of traffic. Offpost vehicles are escorted by Depot personnel in which case the depot employee shall make notifications and direct appropriate actions.

e. Theft or loss. Suspected theft or loss will be immediately reported to the Security Office. The discovery of theft or loss of ammunition or DU material in such quantities and under such circumstances that it appears that a substantial hazard may result to persons in unrestricted areas the Nuclear Regulatory Commission, Region I, King of Prussia, Pennsylvania will be notified immediately by telephone. Thirty days after learning of a loss or theft, a written report will be made to the NRC, Document Control Desk, Washington, DC, with a copy furnished to NRC Region I office in accordance with the requirements in 10 CFR 20.402 and subsequent regulations. Additionally, Army channels and other license holders will be notified as appropriate.

f. Local notification. The first person having knowledge of a radiological accident/incident will immediately call the Security Desk Sergeant. The following information will be furnished:

(1) Name of individual calling.

(2) What happened.

(3) Where it happened.

(4) Whether fire is involved.

(5) Are people injured.

The Security Desk Sergeant will immediately notify the Security Officer, Radiation Protection Officer or alternate, Fire Chief, Safety Manager, Depot Commander or other personnel as identified on the Seneca Army Depot Master Alert Roster as required.

16. Nuclear Regulatory Commission Notification

a. Reports of theft or loss of licensed material will be in accordance with 10 CFR 20.402 and subsequent regulations.

b. Reports of incidents will be in accordance with 10 CFR 20.403 and subsequent regulations.

c. Reports of overexposures and excessive levels and concentrations will be reported in accordance with 10 CFR 20.405 and subsequent regulations.

17. Other Hazards

a. Consideration will be given to other hazards that may be present during operations involving radioactive material and appropriate protective equipment, medical surveillance programs, and controls applied. All safety aspects will be coordinated through the Safety Office, Radiation Protection Officer, Health Clinic and Industrial .

18. Effluents

a. No liquid effluents will be released or discharged by this license under normal circumstances. DU will not cause radiation levels at the boundaries of unrestricted areas to exceed 0.002 rem (0.02mSv) in any one hour or 0.05 rem (0.5 mSv) in a year due to storage restrictions and placement in the restricted area. Engineering controls will be applied and measurements taken for decontamination operations to restrict concentrations of radioactive material in building 819 to less than the values specified in Table 2, Appendix B to paragraphs 20.1001-20.2401 of 10 CFR in the unrestricted areas.

19. Labeling

a. Labeling of containers will be in accordance with 10 CFR 203(f) and subsequent regulations except as exempted.

20. Records and Record Keeping

a. Records of radiation exposure are medical records and as such form a permanent part of personnel records kept on Government workers. Records of surveys, monitoring, and disposals will be kept for 3 years.

Demilitarization
Survey Frequency*

Model	AREA						
	Unpack	Transfer	APE Process	Case	Propellant	Projectile	Packaging**
20mm MK149	M	M	D***	-	-	-	M
25mm PGU-20	M	M	D***	-	-	-	M
25mm M919	M	M	D,A	E	X	B	D
30mm PGU-14	M	M	D***	-	-	-	M
105mm M774	M	M	D,A	E	X	B	D
105mm M833	M	M	D,A	E	X	B	D

M=MONTHLY
D=DAILY
E=EACH, SWIPE ONLY
B=BAGGED
X=PROPELLANT WILL BE SAVED AND STORED AS CONTAMINATED UNTIL PROVEN OTHERWISE

A=AIR MONITORING WILL BE PERFORMED AT SEPARATION POINT ON EACH APE MACHINE TO RUN CONTINIOUSLY WITH ANALYSIS EVERY 4 HOURS

*Abnormal Mechanical Problems, Unexpected Results Will Require More Frequent Analysis

** Packaging includes all areas from APE Machine to final packaging for shipping

*** Cartridge Completely Encapulated No Air Monitoring Required

DECONTAMINATION SURVEYS Bldg 819
SURVEY FREQUENCY

Area	Frequency
Front of Double Doors	Daily at close of shift
Hallway Entrance	Daily at close of Shift
Exit Clean Parts Room	Daily at close of Shift
Floor Equipment Area	Daily at Close of Shift
Personnel Clean Room	Daily at Close of Shift
Secondary Decon, Clean Parts Room, Gross Decon Room	Weekly

4 Staplex Air Monitors will be set up monitor for airborne contamination

Table 6-2

SUPPLEMENT 7
Reference NRC Form 313, Block 11

WASTE MANAGEMENT

1. General.

a. Radioactive waste generated by U.S. Army users is disposed of in accordance with the U.S. Army Armament, Munitions and Chemical Command (AMCCOM) Pamphlet 385-1, Handbook for Disposal of Unwanted Radioactive Waste, Technical Manual (TM) 3-261, Handling and Disposal of Unwanted Radioactive Material, Army Regulation (AR) 385-11, Ionizing Radiation Protection, and current NRC and Department of Transportation (DOT) regulations. At the present time, Headquarters, AMCCOM, Safety Office, Radioactive Waste Disposal Division, is the responsible agency for the safe disposal of all unwanted, low-level radioactive material in the U.S. Army. They issue instructions to all Army users on proper packaging and marking of shipments of radioactive waste. They also conduct on-site audits for full compliance with NRC, DOT and burial site criteria.

b. The depleted uranium ammunition will not normally be involved in operations producing fumes, dusts, mists, or gases; nor will the source material be used in any chemical, metalurgical or nuclear process. The demilitarization process is expected to produce complete projectiles with little or no radioactive waste.

c. If any demilitarization is accomplished on any cartridge listed in this license, any waste will be disposed of in accordance with (IAW) paragraph a above. Licensed material will be transferred to another license holder or disposed of by burial in a licensed low level radioactive waste site. The disposal of any unsafe material generated by demilitarization will be coordinated with the AMCCOM Safety Office, Radioactive Waste Disposal Division.

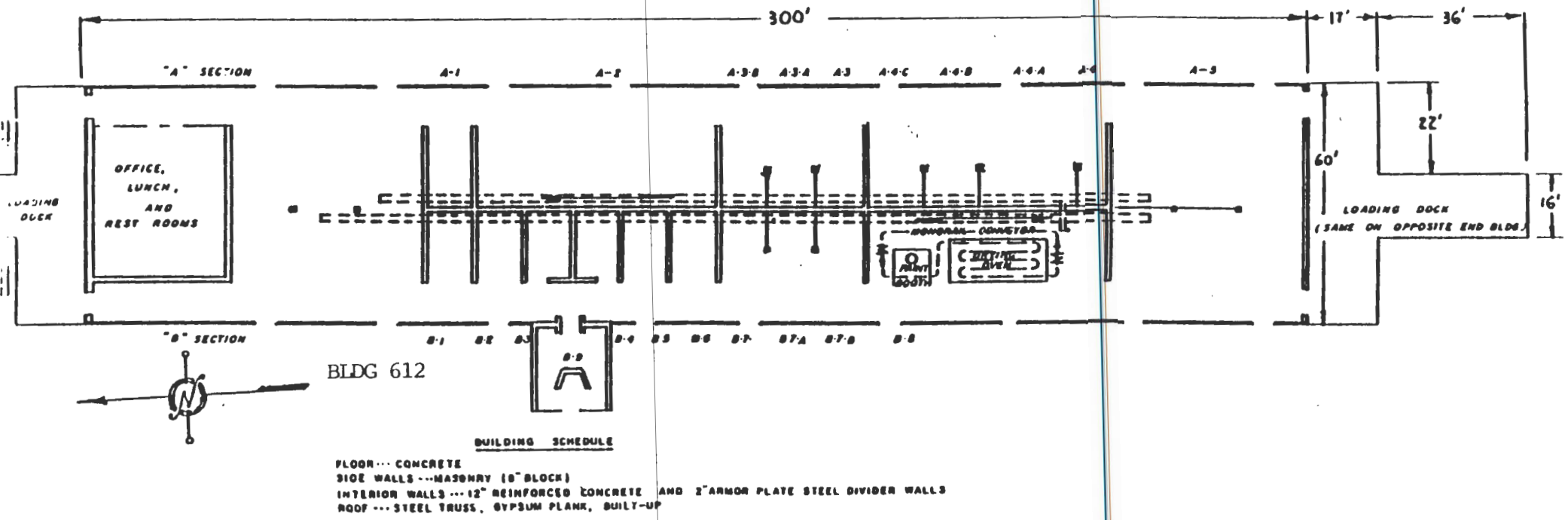
d. Any radioactive waste generated by decontamination of industrial machinery or equipment will be disposed of in accordance with paragraph a above. If any mixed waste is generated by decontamination, the disposition will be coordinated with AMCCOM Safety Office, Radioactive Waste Disposal Division.

e. It may be more economical to dispose of parts of industrial machinery or equipment than to decontaminate them. Disposal will be in accordance with paragraph a above.

2. Statement of Intent and Decommissioning Costs.

a. Seneca Army Depot will comply with 10 CFR, Part 40, paragraph 40.36(e)(4).

b. Funding in the amount of $750,000.00 will be requested through U.S. Army budgetary procedures for decommissioning when and as needed.



Building 612

Enclosure 1 to Supplement 5

NRC FORM 374
(10-89)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Amendment No. 11

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, 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	
1. Department of the Army Headquarters, U.S. Army Armament, Munitions and Chemical Command	In accordance with application dated December 5, 1989 3. License number 12-00722-07 is renewed in its entirety as follows:
2. ATTN: AMSMC-SF Rock Island, IL 61299-6000	4. Expiration date April 30, 1995
	5. Docket or Reference No. 030-14796

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. Promethium-147	A. Radioactive material as ceramic microspheres (3M Company) sealed in sights of military rocket weapons systems	A. No single source to exceed 3 millicuries

9. Authorized Use:

A. For receipt, possession, storage, transfer to authorized recipients within the Department of Defense, and use in the sighting mechanism of military rocket systems.

CONDITIONS

10. Licensed material may be used anywhere in the United States.

11. Licensed material shall be used by, or under the supervision of individuals who have completed the training outlined in application dated December 5, 1989 or letter dated January 23, 1990, and have been appointed by the depot Radiation Safety Officers. The licensee shall maintain records of the individuals who have been designated as authorized users.

12. The Radiation Safety Officer for this license is Byron E. Morris.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number
12-00722-07
Docket or Reference number
030-14796
Amendment No. 11

13. 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. The 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. Application dated June 25, 1984 and December 5, 1988;

B. Letters dated October 21, 1985 and January 23, 1990 with attachment; and

C. Letter dated November 16, 1988 with attachment dated October 20, 1988 and April 19, 1985.

For the U.S. Nuclear Regulatory Commission

Date: April 10, 1990

By Patricia M. Vackellon
Materials Licensing Section, Region III

Executive Summary

Headquarters (HQ), U.S. Army Armament, Munitions and Chemical Command (AMCCOM) submits the following application for renewal of BML 12-00722-07. This license covers the possession and use of Promethium-147 (Pm-147) for use in the front sight of the M72 series Light Antitank Weapon (LAW) system.

Although no additional LAW sights containing Pm-147 are being procured, request renewal of the license to cover those fielded items which have not been turned in for disposal.

This application contains essentially the same information as the original and its subsequent amendments.

NRC LICENSE FORM 313
SUPPLEMENTAL INFORMATION

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* Removed from working copy.

Item 5. Radioactive Material.

a. Element and mass number: Promethium-147 (Pm147).

b. Chemical and physical form: The Pm147 ceramic microspheres (3M Company) are laminated into the transparent plastic sights of the M72A1 and M72A2 Light Antitank Weapon (LAW) rocket systems. Drawings of the source configurations are at enclosure 1.

c. Maximum amount which will be possessed at any one time: No single source to exceed 3 millicuries. One source per rocket.

Item 6. Purpose for which Licensed Material will be Used.

1. Purpose.

The Pm147 is locked in inert spherical ceramic microspheres with diameters ranging from 5 to 60 microns. These spheres are soluble to less than 0.1 percent and are mixed with a self-luminous paint. The front sight of the LAW is painted with the promethium self-luminous paint and appears as described in government drawings and specifications contained at enclosure 3. These sources are used to illuminate the front sight of the M72A1 and M72A2 versions of the LAW rocket.

2. Inventories.

Physical inventories and individual records for the radioactive items covered by this license are not centrally maintained by this command. Accountability is maintained by each individual installation Accountable Property Officer for the radioactive items involved.

Item 7. Individuals Responsible for Radiation Safety Program and their Training and Experience.

Mr. David P. Skogman, AMCCOM Senior Safety Engineer, is designated as License Manager. Mr. Byron E. Morris, AMCCOM Senior Health Physicist, is the Radiation Safety Officer (RSO). Mrs. Katheryn M. LaFrenz and Mr. David Wm Nelson, AMCCOM Health Physicists, are the Alternate Radiation Safety Officers (ARSO).

Resumes are at enclosure 4.

Item 8. Training for Individuals Working in or Frequenting Restricted Areas.

1. Users of AMCCOM radioactive devices are provided with published technical manuals. These publications apprise the user of the presence of radioactive material and specify precautions that must be taken. This information is sufficiently broad in scope to cover the use of the device throughout its entire life cycle.

2. The user installations within the Department of Defense authorized to possess and use the LAW systems containing radioactive sights will have either an appointed Chemical, Biological, Radiological Officer (CBR), Radiation Safety Officer, or an accountable individual to ensure local compliance with the requirements of this license.

3. The RSOs at depots should have, as a minimum, 80 hours formal training in the following areas:

a. Principles and Practices of Radiation Protection.

b. Radioactivity Measurement Standardization and Monitoring Techniques and Instruments.

c. Mathematics and Calculations Basic to the Use and Measurement of Radioactivity.

d. Biological Effects of Radiation.

Successful completion of U.S. Army Radiological Safety Course (7K-F3) at Fort McClellan satisfies this requirement. Alternate training must be evaluated and approved by the AMCCOM RSO.

Item 9. Facilities and Equipment.

1. The LAW rocket is a single shot weapon and once fired is considered expendable. Although maintenance may be required on the system, any maintenance on the radioactive sight is strictly prohibited. After the weapon has been fired or if any damage occurs to the sight, the sight will be removed and disposed as radioactive waste.

2. All depot storage operations and procedures will be conducted under the supervision of the installation RSO or his designate. The RSO will have the authority to immediately halt operations if he feels a safety hazard is present. The following installations ~~are currently designated as depot storage facilities:~~

- Anniston Army Depot
  Anniston, AL

- Lexington-Blue Grass Army Depot Activity
  Lexington, KY

- Letterkenny Army Depot
  Chambersburg, PA

- Pueblo Army Depot
  Pueblo, CO

- Red River Army Depot
  Texarkana, TX

- Seneca Army Depot
  Romulus, NY

- Sierra Army Depot
  Herlong, CA

- Tooele Army Depot
  Tooele, UT

3. Each depot storage area will be placarded to indicate the presence of radioactive material.

4. Individual users do not require radiac instrumentation due to the low level of radiation (less than 0.03 mR/hr) emitted from each sight. Depots possess, as a minimum, beta-gamma radiation detection instruments capable of detecting Promethium-147.

5. Random leak testing at depots will be performed whenever possible. Due to the configuration of the source in the weapon, this can only be done after the LAW has been fired. The samples will be taken by the depot RSO and forwarded to an independent testing laboratory for analysis.

Item 10. Radiation Protection Program.

a. The HQ, AMCCOM Radiation Protection Program is at enclosure 6.

b. Department of Defense User Installations Organizational Responsibilities.

(1) Users of items containing promethium illumination devices are required to utilize and maintain each device in accordance with military regulations and technical manuals issued.

(2) Tampering with the sight in the field is prohibited by Federal Law. If a sight is crushed or broken, the user will notify the local Radiation Protection Officer and those damaged sights will be disposed as radioactive waste.

c. U.S. Army Depot Storage Installations Organizational Responsibilities.

Local Commanders at Depot Storage Installations will be responsible for:

(1) Ensuring that radiation safety efforts at bulk storage locations conform with the requirements of this license, military regulations and NRC Title 10 CFR.

(2) Ensuring depot storage areas are surveyed quarterly. Results will be furnished to the AMCCOM RSO immediately upon the discovery of any abnormal condition or upon request. Records of surveys will be kept available for NRC inspection teams.

(3) Ensuring that inventory and computer records of radioactive material at their installation is accurate and up-to-date.

Item 11. Waste Management.

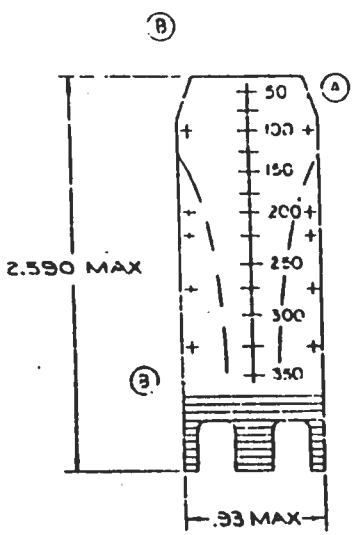
1. Radioactive waste generated by military users is disposed of in accordance with current NRC and Department of Transportation (DOT) regulations. Currently, this headquarters is the program manager and issues instructions to all military users on proper packaging and marking of shipments of radioactive waste. This headquarters also conducts on-site audits of prospective radioactive waste shipments. The shipments are audited for full compliance with DOT, NRC and burial site criteria.

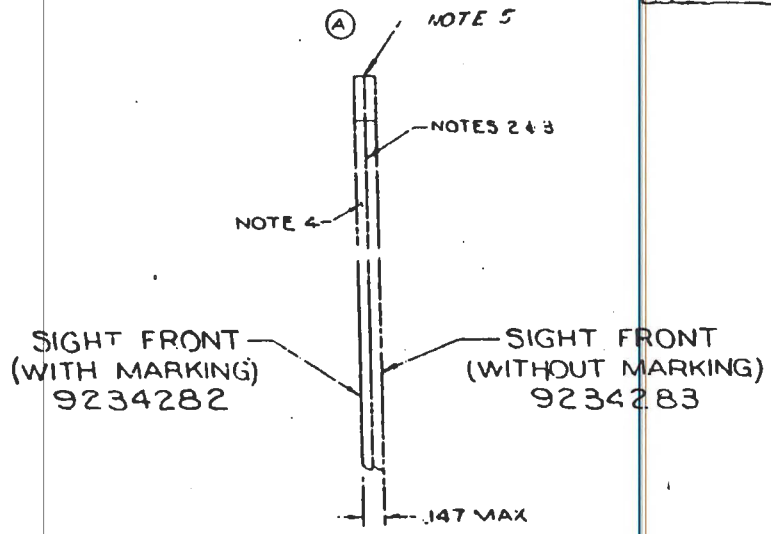
2. Unwanted devices containing promethium sources covered by this license will be packaged in containers acceptable to a commercial burial site for land burial. These containers will be shipped in accordance with DOT and NRC regulations.

ENCLOSURE 1

SOURCE DRAWINGS

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	EOPA 5243-1/6-3-68(REL)	6-3-68	
A	EOPA 5[illegible]250-1/8-[illegible]-68	8-8-68	
B	EOPA 5[illegible]254-1/3-21-69	3-21-69	
C	ENR 720625-1	2-11-71	





NOTES:-
1 - SPEC MIL-A-2550 APPLIES.
2 - LAMINATE WITH CLEAR EPOXY (MARAGLASS 657) DWG NO. A10048843. NOTE 5
(C) 3 - APPLY EPOXY TO UNMARKED PART, MATE ONE PIECE TO THE OTHER.
4 - HOT STAMP (RADIATION SYMBOL, DISPOSE OF PER AR755-15, 3MC OF PM 147).
(A) 5 - STEP OF .005 ALLOWED EITHER END.

FOR ASSOCIATED LISTS SEE 9234281

PART NO. 9234281

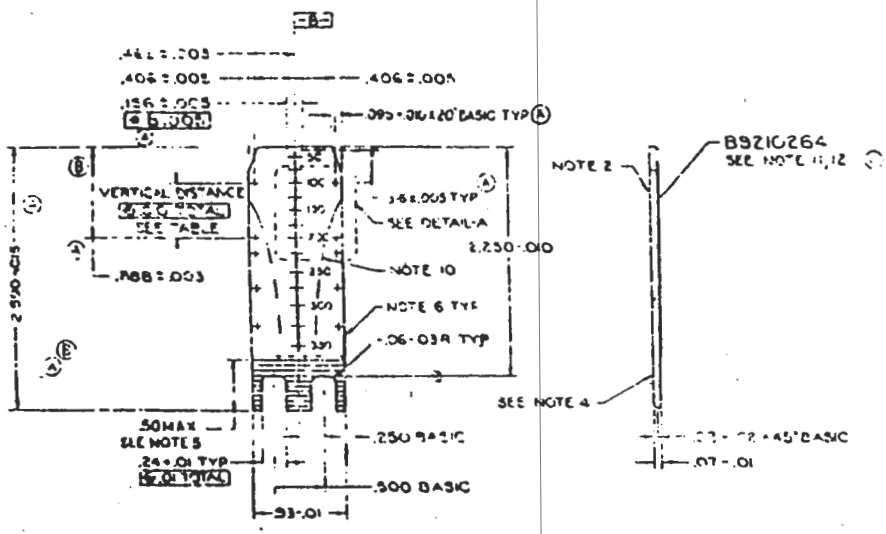
(B) 9210200	CHRM 72 A1	MECHANICAL PROPERTIES	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	ORIGINAL DATE OF DRAWING 3 JUN 68
PART ALSO	USED ON		TOLERANCES ON DECIMALS ±	DRAFTSMAN / CHECKER
APPLICATION			FRACTIONS ± ANGLES ±	ENGR / ENGR
DO NOT	APPLY PART NO		MATERIAL	ENGR / ENGR
			HEAT TREATMENT	APPROVED
			FINISH OR PROTECTIVE FINISH	CONTRACTOR

PICATINNY ARSENAL DOVER, NEW JERSEY

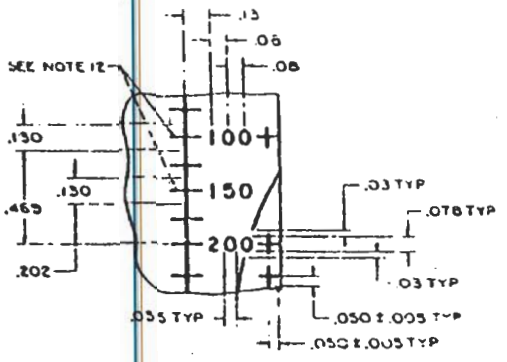
SIGHT FRONT ASSEMBLY

SIZE	CODE IDENT NO	
C	19203	9234281

SCALE 2/1 UNIT WT SHEET



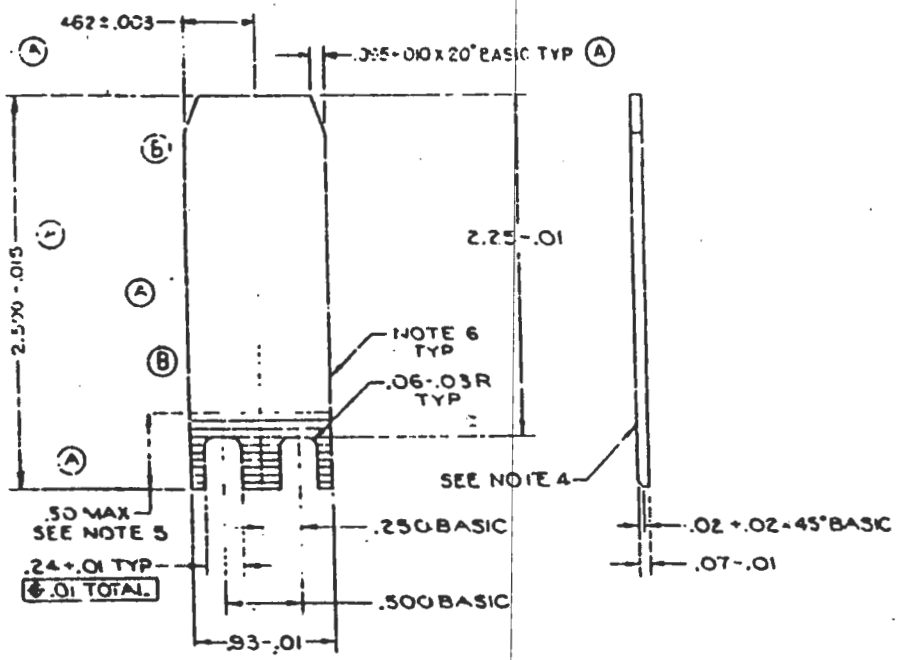
RANGE	VERT DIST FROM 200	HORIZ DIST FROM [B] SEE NOTE
50	.758 BASIC	
75	.598 BASIC	
100	.534 BASIC	
125	.386 BASIC	.418 ±.005
150	.367 BASIC	.401 ±.005
175	.125 BASIC	.334 ±.005
200		.301 ±.005
225	.157 BASIC	
250	.336 BASIC	.241 ±.005
275	.499 BASIC	
300	.675 BASIC	.221 ±.005
325	.877 BASIC	
350	1.065 BASIC	.172 ±.005



DETAIL-A
SCALE: 4/1

NOTES:
1- SPEC MIL-A-2550 APPLIES.
2- MATERIAL: MOLDING PLASTIC, METHACRYLATE, TYPE I, CLASS 3, SPEC L-P-380.
3- MANUFACTURER'S MOLD CAVITY NUMBERS. SEE NOTE 4.
4- MOLD NUMBERS TO BE ON INDICATED SURFACE IN AREA SHOWN.
(D) 5- 10 OR MORE PROTRUSIONS .002 TO .005 IN HEIGHT ARE REQUIRED ON SURFACE IN AREA SHOWN.
6- NO GATE TANGS ON SIDES.
7- ALL LINES AND MARKINGS TO BE .010 ±.004 THICK.
8- ALL NUMBERS TO BE .015 WIDE.
9- SQUARE OR ROUND LINE ENDS OPTIONAL.
10- POINTS FOR STADIA LINES TO BE LOCATED FROM DIMENSIONS GIVEN IN TABLE.
(C) 11- RETICLE TO BE HOT STAMPED .005 HIGH WITH ROLL LEAF EXCEPT 100 AND 150 CENTER MARKS. SEE NOTE 12.
(C) 12- TO THE 100 AND 150 CENTER MARKS ONLY, APPLY A MAXIMUM OF 3 MILLICURIES OF CERAMIC BOUND PROMETHIUM 147 IN THE FORM OF RADIOLUMINESCENT PAINT 1004-3846. THEN APPLY ONE COAT OF WHITE ACETATE PAINT 9235500. THIS COMBINATION MUST EMIT A MINIMUM BRIGHTNESS OF 90 MICROLAMBERTS.
13- UNTOLERANCED DIMENSIONS NEED NOT BE GAGED.

[B]		SEE NOTE 2	3 JUN 68	PART NO. 9234282
				SIGHT FRONT (WITH MARKING)
			D 19203	9234282



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	EOPA 52431-1/6-3-68 FEL	6-3-68	
A	EOPA 53230-1/8 5-68	8-5-68	
B	EOPA 54304-1/1-21-69	1-21-69	
C	NCR 71006-1	06-27-71	

NOTES:-
1- SPEC MIL-A-2550 APPLIES.
2- MATERIAL:- MOLDING PLASTIC, METHACRYLATE, TYPE I, CLASS 3, SPEC L-P-380.
3- MANUFACTURER'S MOLD CAVITY NUMBER. SEE NOTE 4.
4- MOLD NUMBERS TO BE ON INDICATED SURFACE IN AREA SHOWN.
(C) 5- 10 OR MORE PROTRUSIONS .002 TO .005 IN HEIGHT ARE REQUIRED ON SURFACE IN AREA SHOWN.
6- NO GATE TANGS ON SIDES.

PART NO. 9234283

(S) 9234281	1 CHRM72A1	MECHANICAL PROPERTIES	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	3 JUN 68
HEAT ASSY	USED ON	YP	TOLERANCES ON DECIMALS ±	DRAFTSMAN
APPLICATION		TS	FRACTIONS ± ANGLES ±	ENGR
DO NOT	APPLY PART NO	EL2	MATERIAL SEE NOTE 2	ENGR
		RA		ENGR
		BH	HEAT TREATMENT	APPROVED
		BN	FINAL PROTECTIVE FINISH	ARMAMENT

PICATINNY ARSENAL DOVER, NEW JERSEY

SIGHT FRONT (WITHOUT MARKING)

SIZE	CAGE IDENT NO	9234283
C	19203	

SCALE 2/1 UNIT WT SHEET

ENCLOSURE 2

SAFETY EVALUATIONS AND RESULTS

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
EDGEWOOD ARSENAL, MARYLAND 21010

IN REPLY REFER TO:
USAEHA-RB

1 FEB 1967

RADIOLOGICAL HYGIENE SPECIAL STUDY NO. 5365R27-67, PART II
EVALUATION OF MATERIAL
FRONT SIGHT OF LAW MISSILE LAUNCHER
CONTAINING PROMETHIUM-147
5-13 December 1966

1. Introduction.

a. This study was performed under the provisions of Chapter V, AR 40-5 and FONECON, Colonel Redmond, Preventive Medicine Division, OTSG and Colonel Hilcken, USAEHA, 15 August 1966.

b. The purpose of this study was to determine the extent of removable promethium-147 contamination on the surfaces of the front sight of the LAW missile launcher and leakage from the sight, if any, and the potential hazard to user personnel.

c. Twenty-four, each, front sights for the LAW missile launcher were received from Mr. LaCosta, Warhead Division, US Army Munitions Command, Picatinny Arsenal, New Jersey. These 24 sights represent three different prototypes in which the promethium-activated phosphor was applied in three different configurations and in varying amounts of radioactive material.

d. The sights, manufactured by the 3-M Company, St Paul, Minnesota, are fabricated from a transparent plastic material. The luminous markings are laminated between two pieces of the plastic material. Each sight is 2-15/16"x1-3/8"x3/8" in size. The following is a description of the markings of each type of sight and USAEHA Laboratory Numbers:

(1) Luminous markings in the form of two crosses. Activity of promethium from 0.13 mCi to 3.0 mCi, USAEHA Laboratory Numbers FM-224 thru FM-231. FM-231 is mounted in a sight holder.

(2) Luminous markings in the form of two lines. Activity of promethium from 0.10 mCi to 3.0 mCi, USAEHA Laboratory Numbers FM-232 thru FM-239. FM-239 is mounted in a sight holder.

(3) Luminous marking in the form of two circles. Activity of promethium from 0.13 mCi to 3.0 mCi, USAEHA Laboratory Number FM-240 thru FM-247. FM-247 mounted in sight holder.

2. Procedures and Findings.

a. The surfaces of each sight were wiped with a Metricel filter

moistened with distilled water. The filter was then counted by liquid scintillation on a counter calibrated with a standard promethium-147 solution.

b. The sights, less the three mounted units, were placed in individual beakers, covered with distilled water, and allowed to stand at room temperature. After 24 hours, an aliquot of water was counted by liquid scintillation.

c. The beta-gamma activity emanating from the sights was measured on contact and at six inches with a side window Geiger counter with the beta window open.

d. Results of all tests are shown in Table 1.

3. Conclusions.

a. Removable contamination on these prototype sights is insignificant.

b. These sights, in their present condition do not present a hazard to user personnel.

4. Recommendations.

a. The sights should be visually checked after use to determine the integrity of the plastic.

b. The sights should be wipe-tested periodically during test period to determine if there is leakage of promethium with use.

c. Leaking or damaged sources should be disposed of in accordance with applicable regulations.

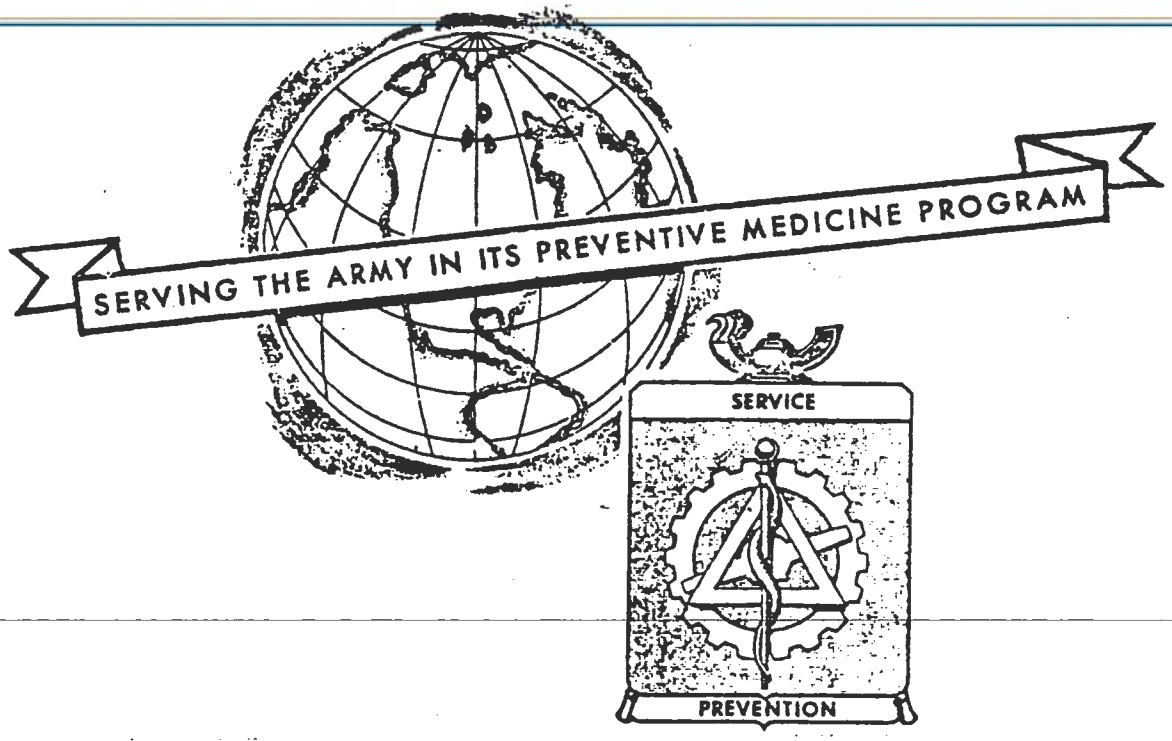
Alphus L. Jones
ALPHUS L. JONES
Chief, Bioassay Division

MARTIN W. HERMAN
SFC E7, AMEDS

APPROVED:

John A. Hilcken
JOHN A. HILCKEN
Colonel, MSC
Director, Radiation Services

RADIOLOGICAL HYGIENE SPECIAL STUDY NO. 5365R27-67, PART II
EVALUATION OF MATERIAL
FRONT SIGHT OF LAW MISSILE LAUNCHER
CONTAINING PROMETHIUM-147
5-13 December 1966



US ARMY
ENVIRONMENTAL HYGIENE AGENCY
EDGEWOOD ARSENAL, MD. 21010

USAEHA-RB Radl Hyg Spec Study No. 5365R27-67, Part II, Eval of Material, Front Sight LAW Missile Launcher Containing Promethium-147 5-13 Dec 66

TABLE 1

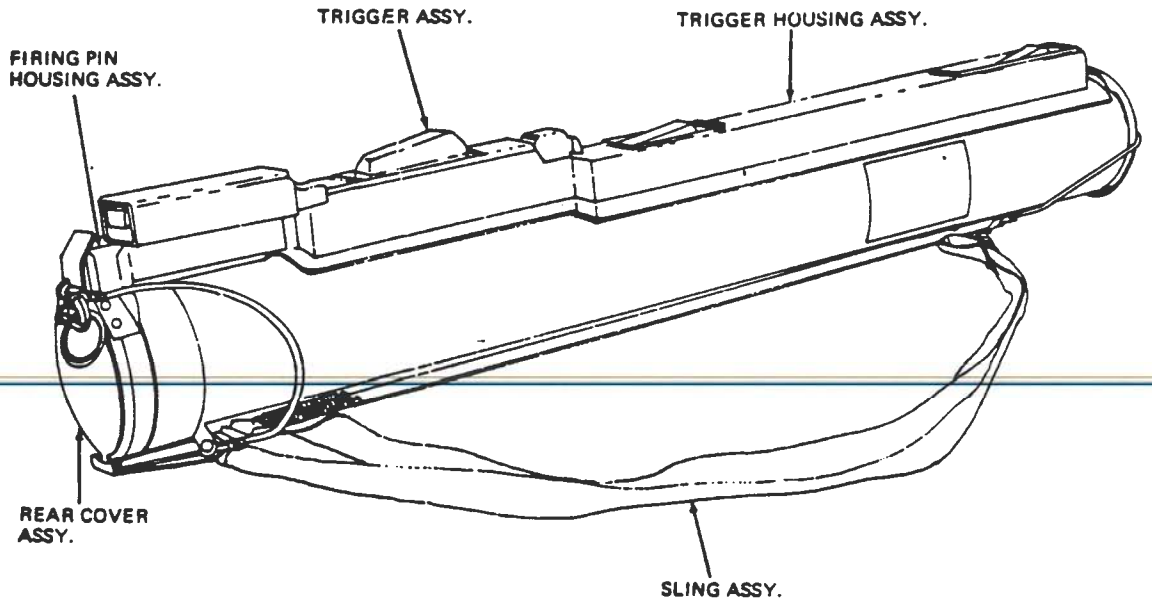
RESULTS OF TESTS ON LAW MISSILE SIGHTS

Lab No.	Activity Pm-147 mCi	Beta-Gamma Activity on contact mR/hr	Beta-Gamma Activity at 6" mR/hr	Wipe Test DPM	Submersion Test DPM
FM-224	0.13	0.11	0.05	15.8	331
FM-225	0.5	0.13	0.06	23.1	268
FM-226	0.5	0.10	0.06	11.5	211
FM-227	2.0	0.14	0.06	7.2	197
FM-228	2.5	1.0	0.05	11.9	239
FM-229	2.5	0.9	0.06	15.2	295
FM-230	2.5	1.1	0.06	56.9	254
FM-231	3.0	0.5	0.05	13.1	
FM-232	0.10	0.08	0.05	113	183
FM-233	0.10	0.08	0.05	91.7	331
FM-234	0.4	0.08	0.05	23.0	367
FM-235	2.0	0.5	0.05	156	204
FM-236	2.0	0.7	0.05	16.6	338
FM-237	2.0	0.8	0.06	66.6	218
FM-238	2.0	0.8	0.07	135	331
FM-239	3.0	0.5	0.06	13.1	
FM-240	0.13	0.15	0.06	99.4	176
FM-241	0.13	0.14	0.04	14.7	162
FM-242	0.5	0.12	0.04	69.7	443
FM-243	0.5	0.4	0.05	17.9	183
FM-244	2.5	2.5	0.07	51.6	225
FM-245	2.5	2.0	0.05	69.4	295
FM-246	2.5	2.5	0.08	40.3	281
FM-247	3.0	0.6	0.05	43.1	

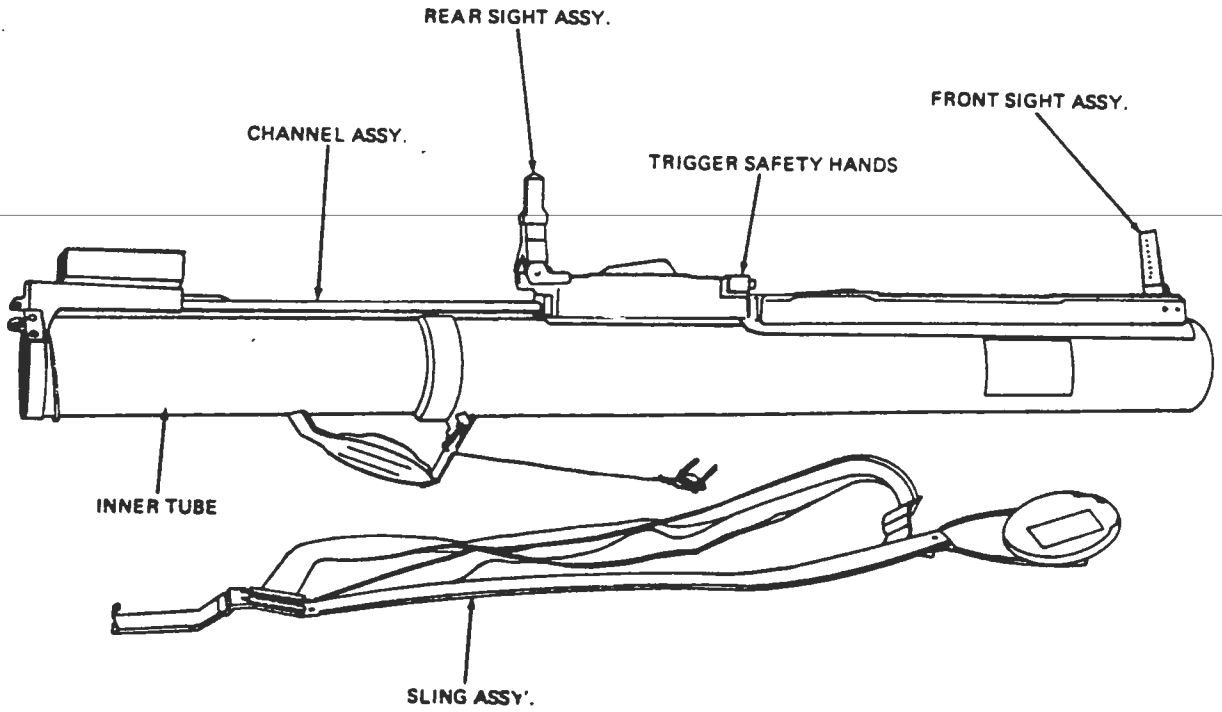
ENCLOSURE 3

DEVICE DRAWINGS

LIGHT ANTITANK WEAPON (LAW) SYSTEM M72 SERIES



ARD80-0504A



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ENCLOSURE 5

HQ, AMCCOM RADIATION PROTECTION PROGRAM

AMSMC – SFS

AMCCOMR 385-3

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
Rock Island, Illinois 61299-6000

AMCCOM REGULATION
No. 385-3

27 October 1987

Safety

RADIATION SAFETY FOR COMMODITIES

Supplementation of this regulation requires prior approval from HQ, AMCCOM (AMSMC-SFS), Rock Island, IL 61299-6000.

1. Purpose.

This regulation establishes the Ionizing Radiation Safety Program as described in AR 385-11, AR 700-64, and AMCR 385-25.

2. Applicability.

This regulation applies to U.S. Army Armament Research, Development and Engineering Center (ARDEC); U.S. Army Chemical Research, Development and Engineering Center (CRDEC); and the following elements of Headquarters, U.S. Army Armament, Munitions and Chemical Command (HQ, AMCCOM):

Safety Office (AMSMC-SF)
Staff Surgeon (AMSMC-SG)
Maintenance Directorate (AMSMC-MA)
Materiel Management Directorate (AMSMC-MM)
Procurement Directorate (AMSMC-PC (R))
Production Directorate (AMSMC-PD)
Product Assurance Directorate (AMSMC-QA)
Weapon Systems Management Directorate (AMSMC-AS)
International Logistics Directorate (AMSMC-IL)
Installation Support Directorate (AMSMC-IS)
Chief Counsel for Procurement and Readiness (AMSMC-GC (R))
Defense Ammunition Directorate (AMSMC-DS)
Transportation and Traffic Management Directorate (AMSMC-TM)

3. Explanation of Terms.

Definitions of technical terms in AR 385-11 and AR 700-64 will apply to this regulation.

4. Policy.

All AMCCOM directorates and organizations involved in the procurement, storage, distribution, and use of AMCCOM radioactive commodities will ensure Nuclear Regulatory Commission (NRC) license conditions and applicable Federal, State, and Army radiation safety requirements are met for AMCCOM radioactive commodities.

5. Responsibilities.

a. The Chief, Safety Office, HQ, AMCCOM, will:

(1) Exercise staff supervision of the AMCCOM Ionizing Radiation Safety Program.

(2) In coordination with the Procurement Directorate, Quality Assurance Directorate, and Production Directorate, prepare safety requirements to be included in the Procurement/Work Directives, solicitations, and contracts for radioactive commodities.

(3) Incorporate safety-related instructions, cautions, and warnings, based on hazards involved and regulatory requirements, into technical literature.

b. The NRC License Manager will:

(1) Coordinate, obtain, administer, review, amend, and maintain necessary NRC licenses for radioactive commodities managed by AMCCOM.

(2) Provide information and guidance to the AMCCOM Commanding General (CG) with respect to limitations, constraints, and conditions which affect each radioactive commodity.

(3) Assure licensed material is not transferred to unauthorized persons or organizations.

(4) Chair the HQ, AMCCOM, Ionizing Radiation Control Committee (IRCC).

c. The HQ, AMCCOM, Radiological Protection Officer (RPO) will:

(1) Provide the AMCCOM CG, the IRCC, and users of radioactive material with advice and assistance in all matters pertaining to the radioactive commodities.

(2) Implement the radiation safety program for the AMCCOM radioactive commodities.

(3) Review existing and proposed radiological operations and procedures, field reports, test results, and surveys to ensure compliance with radiation safety regulations.

(4) Ensure the required radiation surveys are performed. The accuracy of such surveys, if performed by others, remains the responsibility of the RPO.

(5) Act as the point of contact on all matters pertaining to the NRC license and conditions imposed by the license during the life cycle of radioactive commodities.

(6) Monitor the life cycle of radioactive commodities to ensure NRC license conditions are met.

(7) Initiate the action necessary to correct any deviation from license conditions and requirements of the NRC, Department of the Army, U.S. Army Materiel Command, and AMCCOM on radioactive materials.

(8) Provide technical support for the radioactive waste program.

d. The Staff Surgeon, HQ, AMCCOM, will provide medical information concerning potential health hazards of ionizing radioactive material as used in AMCCOM commodities.

e. The Director, Maintenance Directorate, HQ, AMCCOM, will:

(1) Ensure specific instructions on handling, storing, and disposal of radioactive commodities are incorporated in the technical publications and instructions to the field.

(2) Provide training, as required, to other Army agencies for maintenance, rebuild, and rework of AMCCOM radioactive commodities.

(3) Obtain concurrence of AMCCOM RPO on above actions.

f. The Director, Materiel Management Directorate, HQ, AMCCOM, will:

Maintain records of total quantities of radioactive commodities procured.

g. The Director, Procurement Directorate, and the Director, Production Directorate, HQ, AMCCOM, will:

(1) Ensure the contract for purchase of radioactive commodity is identified as a hazardous material contract. Ensure a preaward safety survey is performed.

(2) Ensure clauses for safety, transportation, and product assurance acceptance procedures are included in the solicitation.

(3) Ensure the technical data package and the solicitation have been coordinated with AMSMC-SF.

h. The Director, Procurement Directorate, HQ, AMCCOM, will:

(1) Administer and keep records of the Army radioactive waste program, including radioactive material, isotope, quantity, where generated, and where and when disposed.

(2) Obtain AMSMC-SF and AMSMC-TM concurrence prior to authorizing shipments of radioactive waste.

i. The Director, Product Assurance Directorate, HQ, AMCCOM, will:

(1) Provide adequate and proper inspection and test requirements for AMCCOM radioactive commodities when involved in specifications and technical Quality Assurance Provisions (QAPs).

(2) Implement the specifications and technical QAPs for AMCCOM radioactive commodities throughout the life cycle.

(3) Ensure that during acceptance inspection, the Government inspector rejects the lot of material represented by the sample if any defect is encountered regarding the radioactive material.

(4) Implement a surveillance program for verification of the integrity of the radioactive material, both in use and storage, for the entire life cycle of the radioactive commodity, with analysis performed by an independent test laboratory.

(5) Make available to the AMCCOM RPO all records of testing, inspection, and pertinent information.

j. The Commanders of ARDEC and CRDEC will provide Technical Data Packages (TDPs)/drawings and will coordinate research and development activities with the AMCCOM RPO, for systems under their management, to ensure input is provided for timely preparation of the commodity NRC licenses.

k. The Director, Weapon Systems Management Directorate, HQ, AMCCOM, will:

(1) Coordinate and manage all activities for level II systems, as necessary, to ensure that input is provided to the AMCCOM RPO for timely preparation of NRC license applications.

(2) Provide guidance and assistance to the AMCCOM RPO regarding enforcement and compliance with NRC license conditions.

l. The Director, International Logistics Directorate, HQ, AMCCOM, will staff all foreign military sales cases involving the sale of radioactive material through the AMCCOM RPO.

m. The Director, Installation Support Directorate, HQ, AMCCOM, will provide guidance in the development of environmental documentation for NRC license applications.

n. The Chief Counsel for Procurement and Readiness, HQ, AMCCOM, will provide legal interpretations and guidance for all matters pertaining to radioactive licensing.

o. The Director, Defense Ammunition Directorate, HQ, AMCCOM, will maintain records of total quantities of radioactive commodities managed within the wholesale system, excluding level I and II managed items.

p. The Director, Transportation and Traffic Management Directorate, HQ, AMCCOM, will provide guidance on all matters concerning transportation of radioactive commodities and radioactive waste.

AMCCOMR 385-3

27 October 1987

The proponent of this publication is the HQ, AMCCOM, Safety Office. Users are invited to send comments to Commander, AMCCOM, ATTN: AMSMC-SFS, Rock Island, IL 61299-6000.

FOR THE COMMANDER:

LARRY D. BACHELOR
Colonel, GS
Chief of Staff

OFFICIAL:

David Montgomery

DAVID MONTGOMERY
1LT, GS
Adjutant

DISTRIBUTION:
A and B-6
AMSMC-SFS (5)

APPENDIX A

RECORD OF ENVIRONMENTAL CONSIDERATION

RECORD OF ENVIRONMENTAL CONSIDERATION

TO: AMSMC-ISE (Mr. Ron Shinbori)

FROM: AMSMC-SF

Project Title: NUCLEAR REGULATORY COMMISSION LICENSE BML 12-00722-07.

Brief Description: License covers possession and use of promethium 147 for use in the front sight of the M72 series light antitank weapon (LAW) system.

Anticipated Date and/or Duration of Proposed Action: November 1989 to November 1994

Reason for Using a Record of Environmental Consideration:

b. Is categorically excluded under the provisions of CX A-29, AR 200-2, Environmental Effects of Army Actions, Appendix A, 1 September 1981, and no extraordinary circumstances exist as defined in AR 200-2, paragraph 4-2, because the issuance of this license permits use of Department of the Army property by Department of Defense personnel and is predicated upon compliance with the NEPA.

11/7/89
(Date)

David P. Skogman
DAVID P. SKOGMAN
Ch, Systems, Chemical, & Radiation Div

11/16/89
(Date)

RONALD T. SHINBORI
Ch, Environmental Quality Division

RTK 15 NOV 89