"Uranium Projectile"
ML063170099

~~Check w/ Christine on other searches~~
Done

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY JOINT MUNITIONS COMMAND
1 ROCK ISLAND ARSENAL
ROCK ISLAND, IL 61299-6000

REPLY TO ATTENTION OF:

August 15, 2006

Safety/Rad Waste Directorate

Administrator
Nuclear Regulatory Commission
Nuclear Materials Licensing Branch
Region III
2443 Warrenville Road Ste 210
Lisle, Illinois 60532-4352

Dear Sir:

We request you add the Area-31 Production Waste landfill at Lake City Army Ammunition Plant to our SUC-1380 license. The Area 31 landfill is located in the northeast corner of the Lake City Army Ammunition Plant reservation (see enclosed map).

During a Comprehensive Environmental Response, Compensation and Liability Act removal action in June 2006, four medium caliber depleted uranium projectile bodies were found in the Area 31 landfill. We believe the projectile bodies are components of 20mm Davy Crockett spotter rounds that were produced in the 1960s under Atomic Energy Commission license SUB-1195 issued to Remington Arms who was the Lake City Army Ammunition Plant operating plant contractor at that time. Currently, the Army's SUC-1380 license covers areas on the Lake City Army Ammunition Plant firing range where Davy Crockett spotter rounds were fired. The projectile bodies recently found in the Area 31 landfill appear to be production line rejects. The projectile bodies were intact and had not been fired (see enclosed photograph).

Soil accumulated from the Comprehensive Environmental Response, Compensation and Liability Act removal action is currently stockpiled in the Area 31 landfill. This soil has been screened once for possible ammunition explosive items. We are developing a plan to conduct Multi-Agency Radiation Survey and Site Investigation Manual surveys of the stockpiled soils and the footprint for depleted uranium. We will provide the results of that effort to you for free release of the area and removal of the Area 31 landfill from the SUC-1380 license.

The points of contact are Mr. Gary Buckrop and Mr. Mike Styvaert, AMSJM-SF, (309) 782-2969/0880, E-mail amsjm-sf@afsc.army.mil.

Sincerely,

Rosalene E. Graham
Director, Safety/Rad Waste
Directorate

Enclosures

DEPARTMENT OF THE ARMY
FRANKFORD ARSENAL
PHILADELPHIA, PENNSYLVANIA 19137

ML102280342

IN REPLY REFER TO:
COMMANDING OFFICER
FRANKFORD ARSENAL
ATTN: ~~SMUFA~~ SARFA-Z6000

12 September 1973

SUBJECT: Renewal of License No. SUB-459 Issued to Frankford Arsenal

Commander
U. S. Army Materiel Command
ATTN: AMCSF-P
5001 Eisenhower Ave.
Alexandria, VA 22304

1. References:

a. Atomic Energy Commission letter, dated 1 May 1973.

b. SMUFA-Z6000 letter, dated 19 July 1973, subject as above.

c. Telecon dated 10 September 1973 between Mr. T. Grucci, your office, and Mr. A. Ferruggiaro, Frankford Arsenal.

2. As requested by reference 1 c above, additional detailed information required by the basic letter is submitted. Paragraph numbers referenced below refer to paragraphs of the AEC letter.

a. Reference paragraph 1. The maximum amount of depleted uranium to be held is 6,000 kilograms.

b. Reference paragraph 2.

(1) The source material license dated 24 April 1968, issued to Frankford Arsenal, had authorized distribution of explosive devices containing depleted uranium to field units of the Army for military purposes in accordance with the procedures described in the application dated September 19, 1961. Field distribution from Frankford Arsenal has never been made and will not be made in the future. The only distribution made is transfer to an installation or activity in possession of a valid source material license. Consequently, the authorized use of depleted uranium for field distribution is not required and an updating of the 1961 information is not needed. The only authorized use required is for the fabrication and testing of components at Frankford Arsenal.

(2) As stated in paragraph 2 b (1) above, depleted uranium is transferred only to installations or activities in possession of a valid source material license. All shipments are made in accordance with Title 49, Code of Federal Regulation with the applicable radiation and explosive provisions incorporated. The devices are handled as explosives in accordance with AMCR 385-100, "US Army Material Command Safety Manual" and other applicable Department of Defense directives and as radioactive material in accordance with Title 10, Code of Federal Regulations, Part 20. While in use and storage, devices are labeled in accordance with title 10, Code of Federal Regulations, Part 20.203.

c. Reference paragraph 3.

(1) No radioactive materials are disposed of at Frankford Arsenal. Item 13 of the Form AEC-2 submitted on 23 April 1973 by Frankford Arsenal specifies that disposal is accomplished by transfer through the U. S. Army Radioactive Material Disposal Facility, Aberdeen Proving Ground, MD in accordance with AR 755-15.

(2) The firings of the devices are conducted at this installation in indoor ranges. The impact area is inclosed within a locally exhaust ventilated box equipped with both coarse and absolute filters. Following the firing of each round, the area is vacuumed with a vacuum cleaner equipped with an absolute filter and labeled for exclusive use with depleted uranium. The area is monitored for residual contamination with a beta-gamma survey meter and with smear tests monthly and upon completion of a uranium firing program. If contamination levels above those specified in table 1 of AMCR 385-25 "Radiation Protection" are discovered, decontamination would be accomplished in accordance with AMCR 385-25 and TM 3-220, "Chemical, biological and radiological decontamination". The uranium dust collected in the vacuum cleaner is handled in accordance with the procedures given in paragraph 2 c (4) below.

(3) The current firing programs do not generate "duds" since the explosive charge and depleted uranium projectile are loaded separately. As a consequence, paragraph 7o of PDRL Memo. 385-11 "General SOP for the experimental laboratories and test facilities of the hyperdynamics branch" which was submitted with Form AEC-2 as attachment 4-3, does not apply to the firing of depleted uranium devices. If future firing programs develop which would generate duds, the extraction of the depleted uranium would be governed by AMCR 385-100 and a locally developed standing operating procedure and guided by the munitions designers.

SARFA-Z6000 12 September 1973
SUBJECT: Renewal of License No. SUB-459 Issued to Frankford Arsenal

(4) As is specified in paragraph 6 a (3) of IOD Procedure 385-75 "Standing Operating Procedure for machining depleted uranium", which was submitted with the Form AEC-2 as attachment 4-2, depleted uranium wastes are packed in metal drums, covered with oil, stored as radioactive waste and disposed of in accordance with the provisions of paragraph 2 c (1) above.

(5) A certificate of destruction of the depleted uranium rounds is required when losses are considered as expended in test.

FOR THE COMMANDER:

JOHN FODERARO, M.D.
Chairman, Radiant Energy Committee

ML11280A336

LAKE CITY ARMY AMMUNITION PLANT
AREA 10 SAND REMEDIATION PROJECT
August 2011

Licensee:	U.S. Army
Site Location:	Independence, Missouri
License No:	SUC-1380
Docket No.:	04008767

Decommissioning Status & Current Issues: As of January 1, 2009, the removal of depleted uranium projectile contamination from the Lake City Army Ammunition Plant (LCAAP) Area 10 sand piles was completed. Region III conducted NRC confirmatory surveys on March 21 and 22, 2009 with representatives from the U.S. Environmental Protection Agency (USEPA) and the Missouri Department of Natural Resources present. The NRC survey did not identify any depleted uranium contamination outside release criteria. The USEPA granted permission to LCAAP to backfill the area to prevent land erosion. During the March 21 inspection, LCAAP representatives indicated that a license amendment request with an attached final status survey will be submitted to the NRC for review. The Army notified the NRC on July 5, 2011, that the report for Area 10 has been completed and will submit a license amendment by August 2011 to request the release of Area 10 for unrestricted use.

If the NRC staff makes the determination that the site meets release criteria, the licensee's license will be amended approving the release of the Area. Area 10 is the only decommissioning activity remaining at LCAAP covered by a NRC decommissioning plan. After the LCAAP license has been amended to remove the area 10 Sand Piles, any remaining DU clean-up will be done under the authority of the USEPA (SECY-98-201 and SECY-01-088). The responsibility for over-sight of any remaining residual DU contamination at LCAAP has been deferred to the USEPA. The NRC license will remain in effect, but will not have any further responsibility for clean-up at LCAAP unless help is requested from the USEPA. A listing of documents relating to the NRC and EPA deferral actions, and the Area 10 clean-up is attached.

Estimated Completion Date:	CY 2011
Last Inspection:	August 22, 2010
Regional Contact:	Mike LaFranzo, Senior Health Physicist
	(630) 829-9865

Licensee Contact:	Frank Whitaker, Health Physicist Rock Island Arsenal US Army Joint Munitions Command Safety/Rad Waste - Operations Division AMSJM-SF (309) 782-5062 Cell (309) 716-8848
MDNR Contact:	Margy Barnes Environmental Engineer Missouri Department of Natural Resources Hazardous Waste Program, Federal Facilities 573-751-6838

Background and History: Lake City Army Ammunition Plant (LCAAP) is located on U.S. Highway 7 and 78 between Independence and-Blue Springs, Missouri. The Army built the plant and operated it for the purpose of manufacturing and testing small caliber conventional munitions. Lake City AAP was founded in 1941 as a Government owned/contractor operated facility. From its inception in 1941 until 1985 the plant operating contractor was Remington Arms.

Remington and LCAAP had a small scale depleted uranium (DU) operation during the 1960's and 1970's. The Army designed the DU rounds as "spotters" for a small scale, shoulder fired nuclear device known as the "Davy Crockett." By 1968, the Davy Crockett program ceased and the LCAAP was left with an estimated 44,000 spotter rounds to dispose. In 1971, Remington proposed procedures for the disposal of approximately 44,000 remaining rounds. The rounds were demilitarized by shooting the rounds into a sand filled catch box, identified as the "600-yard bullet catcher." The catch box was filled with sand as an impact material. The impact material was periodically replaced in the catch box. Remington removed the DU contaminated sand from the 600-yard catch box and placed it in an on-site area identified as "Area 10."

The LCAAP site was included in the NRC's Site Decommissioning Management Program on March 29, 1990, because of the depleted uranium (DU) contamination. The EPA pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) initiated remediation of the site in the 1980s, and the LCAAP site was included on the National Priorities List in 1987. EPA proposed the site for remediation under CERCLA because of extensive non-radiological contamination. During the 1990s, the NRC was involved with a number of decommissioning activities at LCAAP. In SECY-08-01, the staff proposed to defer regulation of radioactive contamination remediation of the LCAAP to EPA, except for Area 10, Building 3A, and the area known as the 600-yard bullet catcher. The NRC retained regulatory oversight of these areas based on requests from both the Army and EPA. In SECY-01-0088, the NRC also proposed to deferred the clean-up of Area 10 to the EPA.

In a June 13, 2001, memorandum from William D. Travers, it is indicated that "The Commission has approved the staff recommendation to defer remediation oversight of the depleted uranium contamination located in Area 10 of the Lake City Army Ammunition Plant (LCAAP) to the Environmental Protection Agency (EPA). The Commission also has approved the staff. recommendation to remove the LCAAP from the Site Decommissioning Management Plan (SDMP) once remediation efforts have been completed for Building 3A and the 600-yard Bullet Catcher, with the understanding that the LCAAP license will not be considered for termination until Area 10 remediation has also been completed, which may not take place until 2008. Upon final coordination with the parties involved regarding such deferral, the staff should provide written notification to each party documenting the agreed upon terms and conditions. The NRC should retain responsibility to review the EPA's determination that Area 10 remediation has been completed to ensure that the remediation complies with the SDMP cleanup limits."

On August 8, 2001, the NRC amended the Army's license changing the Area 10 clean up schedule to December 31, 2008, and tied down reference to Camper's August 3, 2001, letter to the EPA, MDNR and Army. The Camper memo indicated the following "Based on a review of this agreement, we have determined that this approach is equivalent to the deferral process described in NRC's Staff Requirements Memorandum, dated June 13, 2001, and, therefore,

acceptable to NRC. Please note that NRC reserves the right to review any documentation upon which either EPA, MDNR or the licensee base their finding that Area 10 satisfies NRC cleanup criteria. Also, NRC reserves the right to perform a confirmatory survey of this area."

ML060330080

August 5, 2004

MEMORANDUM TO: Mark Satorius, Director
Division of Nuclear Materials Safety
Region IV

FROM: Scott C. Flanders, Deputy Director /RA/
Environmental and Performance
Assessment Directorate
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

SUBJECT: TECHNICAL REVIEW OF CODE OF FEDERAL REGULATIONS (10 CFR) PART 20.2002 REQUEST BY U.S. DEPARTMENT OF THE AIR FORCE

On June 30, 2004, you requested that the Office of Nuclear Material Safety and Safeguards review the U.S. Department of Air Force's June 23, 2004, *Code of Federal Regulations* (10 CFR) Part 20.2002 request. My staff has reviewed the 10 CFR Part 20.2002 request and finds it acceptable.

The licensee's analysis conservatively assumed the inventory of depleted uranium in each of the four tanks was the maximum number of penetrators (i.e., forty rounds) that potentially hit the tanks. The licensee analyzed the dose to a transport driver, loader, burial worker, and long-term impacts to a residence. While the licensee did not analyze the groundwater impacts from the disposal, staff reviewed previous analyses in support of NUREG-1640 that showed that the groundwater pathway is not a controlling factor for depleted uranium. Each of the conservative analyses result in dose estimates of less than 0.01 mSv (1 mrem) total dose.

If you have any questions, please contact Christepher McKenney of my staff at 301-415-6663.

Docket: 030-28641

Attachment: As stated

B/63

August 5, 2004

MEMORANDUM TO: Mark Satorius, Director
Division of Nuclear Materials Safety
Region IV

FROM: Scott C. Flanders, Deputy Director /RA/
Environmental and Performance
Assessment Directorate
Division of Waste Management
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Office of Nuclear Material Safety
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If you have any questions, please contact Christepher McKenney of my staff at 301-415-6663.

Docket: 030-28641

Attachment: As stated
DISTRIBUTION:
Public
EPAB R/F
DWM R/F
ADAMS Accession Nos.:
Incoming: ML041820450
Response: ML042120512
Package: ML042120520 *See Previous Concurrence

OFFICE	NMSS/DWMEP	NMSS/DWMEP	NMSS/DWMEP
NAME	CMcKenney*	MThaggard*	SFlanders
DATE	8/2/04	8/2/04	08/05 /04

OFFICIAL RECORD COPY

TECHNICAL REVIEW OF U.S. DEPARTMENT OF AIR FORCE 10 CFR PART 20.2002 DISPOSAL REQUEST FOR TANKS CONTAINING DEPLETED URANIUM PENETRATORS

BACKGROUND

The U.S. Department of Air Force submitted a request to dispose of four M-47 tanks from the 98th Range Wing at Nellis Air Force Base Nevada to US Ecology's Hazardous Waste Treatment and Disposal Facility in Idaho, under 10 CFR 20.2002. These four tanks have been used as target practice for A-10 aircraft and have been contaminated by depleted uranium from the 30mm rounds, each containing 300 grams of depleted uranium, fired by the aircraft. Based on records, each tank has less than forty of these rounds within it. Because of the kinetic energy released when a vehicle is hit by a depleted uranium round, some of the depleted uranium from the round will bond with the metal surrounding the entry point and the interior of the chamber.

TECHNICAL EVALUATION

For the analysis, the licensee conservatively assumed that each of the four tanks contained forty rounds. The licensee analyzed the dose to a transport driver, loader, burial worker, and long-term impacts to a residence. While the licensee did not analyze the groundwater impacts from the disposal, staff reviewed previous analyses in support of NUREG-1640 that showed that the groundwater pathway is not a controlling factor for depleted uranium. Each of the conservative analyses result in dose estimates of less than 0.01 mSv (1 mrem) total dose.

For the truck driver scenario, the licensee used empirical dose rate information from a depleted uranium projectile. They ignored any benefits of shielding due to the cab or tank armor and calculated the dose rate to a truck driver assuming that twenty rounds were within 3 meters (~10 feet) of the driver of the truck. They assumed that the same driver transported all four tanks on separate 16-hour trips. The total dose calculated for this very conservative estimate was 0.0024 mSv (0.24 mrem).

For loading, unloading, and burying the tanks, a similar analysis was calculated, however, the exposure time was 2 hours per tank. The only relevant exposure pathway is external as there is no removable contamination on the exterior of the tanks and they will be sealed before shipping. While no removable contamination is assumed, the scenario remains conservative because of the assumption that twenty rounds are near the exposed person. This scenario resulted in a conservative dose estimate of 0.0006 mSv (0.060 mrem).

The third scenario analyzed by the licensee was the long-term impacts from the tanks. The licensee conservatively assumed that the mass of depleted uranium in the tank would mix instantly with a volume of soil equivalent to the displacement volume of the tank. The analysis did not assume any cover was present and assumed that a house was built over the disposal area. The pathways of exposure were external, inhalation, and radon. External exposure is the dominant pathway. The result of this very conservative and unlikely scenario was a peak annual dose of 0.009 mSv (0.9 mrem).

Attachment

CONCLUSIONS

The staff recommends that the U.S. Department of Air Force request to dispose of four M-47 tanks from the 98th Range Wing at Nellis Air Force Base Nevada to US Ecology's Hazardous Waste Treatment and Disposal Facility in Idaho, under 10 CFR 20.2002, be approved. For the analysis, the licensee conservatively assumed that each of the four tanks contained forty depleted uranium rounds. The licensee analyzed the dose to the transport driver, loader, burial worker, and long-term impacts to a residence. While the licensee did not analyze the groundwater impacts from the disposal, staff reviewed previous analyses in support of NUREG-1640 that showed that the groundwater pathway is not a controlling factor for depleted uranium. Each of the conservative analyses result in dose estimates of less than 0.01 mSv (1 mrem) total dose.

ML063070022

NRC FORM 374 U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 45

MATERIALS LICENSE

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

DC 11300 31544

Licensee	
1. Department of the Army	In accordance with **letter dated August 15, 2006,**
	3. License number SUC-1380 is **amended** in its entirety to read as follows:
2. HQ, US Army Joint Munitions Command ATTN: AMSJM-SF 1 Rock Island Arsenal Rock Island, IL 61299-6000	4. Expiration date May 31, 2014
	5. Docket No. 040-08767, SUB-1195 Reference No.

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Depleted uranium	A. Solid Metal alloy	A. 42,000,000 Kilograms
B. Depleted uranium	B. Solid Metal alloy	B. 14,000 Kilograms

9. Authorized Use:

A. To be used for receipt, storage and transfer of military devices containing depleted uranium components and for disassembly of depleted uranium munitions as described in application dated March 4, 2004.

B. For possession and storage incident to decommissioning of facilities.

CONDITIONS

10. A. Licensed material listed in Subitem 7.A. may be stored in bulk quantities at the Seneca Army Depot, Romulus, New York; Hawthorne Army Ammunition Plant, Hawthorne, Nevada; the Letterkenny Army Depot, Chambersburg, Pennsylvania; Crane Army Activity, Crane, Indiana; Bluegrass Army Depot, Richmond, Kentucky; Anniston Army Depot, Anniston, Alabama; Tooele Army Depot, Tooele, Utah; McAlester Army Ammunition Plant, McAlester, Oklahoma; and Red River Army Depot, Texarkana, Texas. Licensed material for deployment may be stored at non-bulk locations at U.S. Army bases anywhere in the United States.

B. Licensed material listed in Subitem 7.B. may be stored at the Lake City Army Ammunition plant, (LCAAP) Independence, Missouri, incident to decommissioning of facilities.

1. The licensee is authorized to remediate Area 10 of LCAAP in accordance with the licensee's "Lake City Army Ammunition Plant Area 10 (Sandpile) Radioactive Contaminated Soil Decommissioning Plan," Revision 5.1, dated April 22, 1998. The licensee shall use the

MATERIALS LICENSE
SUPPLEMENTARY SHEET

subject License Number
SUC-1380

Docket or Reference Number
040-08767, SUB-1195

Amendment No. 45

unrestricted use criteria listed in "Guidance for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source, or Special Nuclear Material" for surfaces of buildings and equipment, and the Branch Technical Position, "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations," for soils.

Specific values are given below-

Soils:
Depleted uranium- 1.3 Bq/gm (35 pCi/gm) total uranium.

Equipment and Surfaces:
5,000 dpm alpha/100 cm²; average contamination level over 1 m² or smaller area
5,000 dpm beta-gamma/100 cm²; average contamination level over 1 m² or smaller area
15,000 dpm alpha/100 cm²; maximum over 100 cm²
15,000 dpm beta-gamma/100 cm²; maximum over 100 cm²
1,000 dpm alpha/100 cm²; removable
1,000 dpm beta-gamma/100 cm²; removable

Exposure rate:
Soils - 2.6 nC/kg/hr (10 uR/hr) average above background at 1 meter
Equipment and buildings - 1.3 nC/kg/hr (5 uR/hr) above background at 1 meter.

ii. Once the small sand piles are removed, the licensee shall perform a 100-percent surface scan, collect four samples per 10-meter by 10-meter grid, and perform an exposure rate measurement one meter above the ground surface. For the large sand pile the license shall perform a 100-percent scan of the material as it is being conveyed to the large storage sacks. Further, the licensee will collect one sample per 3- cubic meters (105-cubic feet). This is approximately four samples per a 10-meter by 10- meter grid. Once the large sand pile has been removed, the licensee shall perform a 100-percent surface scan, collect four samples per each 10-meter by 10-meter grid, and perform an exposure rate measurement one meter above the ground surface.

iii. Downwind area air sampling shall be performed when work activities would cause the potential of producing airborne radioactivity, such as earth moving.

iv. The procedure for licensee-initiated and approved changes as described in Revision 5.1 to the LCAAP Area 10 (Sandpile) Radioactive Contaminated Soil Decommissioning Plan, dated April 22, 1998, may be used provided that:

a. Review of all proposed changes to the Area 10 Decommissioning Plan by the licensee's Project Manager (M. Styvaert) or his designee is in accordance with Administrative Procedure AROP No. 102, "Revisions to the Operational Procedures";

MATERIALS LICENSE
SUPPLEMENTARY SHEET

subject License Number
SUC-1380

Docket or Reference Number
040-08767, SUB-1195

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b. The licensee submits to NRC, for approval, any changes that would result in an unreviewed safety question, a change in a license condition, or changes that would have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety;

c. The licensee documents the changes made.

v. The licensee shall use the unrestricted use criteria listed in "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source or Special Nuclear Material" for surfaces of buildings and equipment.

C. Licensed material listed in Subitem 7.B. may be stored at the LCAAP Independence, Missouri, incident to remediation of depleted uranium projectile bodies. The licensee is authorized to remediate the Area-31 Production Waste landfill at LCAAP as described in letter dated August 15, 2006. Survey and remediation activities shall be as described in the "Final Area 31 Final Status Survey Work Plan, Addendum to: Final Removal Action Memorandum and Work Plan - Housekeeping Removal Action, Lake City Army Ammunition Plant, Independence, Missouri, October 2006."

11. A. Licensed material shall be used by, or under the supervision of, Rosaceae A. Graham, Kelly Crooks, or Gary W. Buckrop.

B. The Radiation Safety Officer for this license is Kelly Crooks.

C. The Alternative Radiation Safety Officer for this license is Gary W. Buckrop.

12. This license does not authorize the firing of ammunition containing licensed material.

13. The license shall not store more than 10,000,000 kilograms of licensed material at each bulk location and not more than 50,000 kilograms at each non-bulk storage location.

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

MATERIALS LICENSE
SUPPLEMENTARY SHEET

subject License Number
SUC-1380

Docket or Reference Number
040-08767, SUB-1195

Amendment No. 45

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

A. Application dated March 4, 2004; and

B. Letters dated August 8, 2001 (with enclosures), March 4, 2004 (application cover letter with enclosures) July 18, 2006, **August 15, 2006, September 21, 2006 (with attachments), October 26, 2006 with attached "Area 31 Final Status Survey Work Plan")**.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date OCT 3 1 2006

By George M. McCann

George M. McCann
Decommissioning Branch
Region III

ML090070095 / New Application

NRC FORM 313 (4-2008) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0120 EXPIRES: 10/31/2008

APPLICATION FOR MATERIALS LICENSE

Estimated burden per response to comply with this mandatory collection request: 4.4 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
612 E. LAMAR BOULEVARD, SUITE 400
ARLINGTON, TX 76011-4125

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 JURISDICTIONS.

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

- [x] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [ ] C. RENEWAL OF LICENSE NUMBER _____

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

US Army Installation Command
2511 Jefferson Davis Highway
Arlington, VA 22202

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

US Department of Army Installations

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Mario Owens

TELEPHONE NUMBER

703-681-5200

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 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.

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

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

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

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES *(See 10 CFR 170 and Section 170.31)*

FEE CATEGORY: **2B** 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, 36, 39, 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.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
Robert Wilson, Lieutenant General, Commander		NOV 06 2008

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		
APPROVED BY				DATE	

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

REPLY TO
ATTENTION OF

IMCG

NOV 0 6 2008

MEMORANDUM FOR US Nuclear Regulatory Commission (Dr. Tom McLaughlin), 11545 Rockville Pike, Rockville, MD 20852

SUBJECT: Statement of Intent – Depleted Uranium Possession

1. Reference electronic mail, 25 Mar 08, subject: Nuclear Regulatory Commission License (Encl 1).

2. In accordance with the above reference and as Commander of the U.S. Army Installation Management Command, I exercise the authority to request funding for decommissioning of operations within my command.

3. The funding requirement associated with decommissioning of each activity is estimated at $1.9 M (see encl 2). This estimate includes the soft-target areas as well as a 25 percent contingency factor. Subject to availability, we expect funding be made available to prevent delay of required decommissioning actions.

4. Please contact our Safety Chief, Mr. Mario A. Owens, with any questions or concerns at Mario.Owens@us.army.mil or by phone at (703) 681-5200. Thank you for your support.

2 Encls
as

ROBERT WILSON
Lieutenant General, USA
Commanding

Item 1. New License.

While the U.S. Army has not determined that the Atomic Energy Act (Act) requires a license in this situation, we are providing this application to promote cooperation between our agencies and to the extent required by the Act.

Item 2. Name and Mailing Address of Applicant

US Army Installation Command
2511 Jefferson Davis Highway
Arlington, VA 22202

Item 3. Address Where Licensed Material Will Be Used or Possessed

This license will authorize the possession of residual quantities of depleted uranium system at US Department of Army Installations.

The initial discovery of depleted uranium from the M101 spotting round was at locations within Hawaii and at Fort Hood, TX. Nonetheless, presence of depleted uranium may be determined to exist at additional installations. Installations identified as potential sources for depleted uranium contamination will be subjected to additional investigations to consist of historical site assessments and radiological surveys/ evaluations as necessary to confirm the existence of depleted uranium at a given facility. Additional installations where the M101 spotting round has been found include: Fort Benning, GA; Fort Campbell, KY; Fort Carson, CO; Fort Hood, TX; Fort Knox, KY; Fort Lewis, WA; Fort Riley, KS; Schofield Barracks, HI; and Pohakuloa Training Area, HI. Installations currently subject to further investigation include: Aberdeen Proving Ground, MD; Fort Dix, NJ; and Makua Military Reservation, HI. The NRC will be notified upon confirmation that depleted uranium is present at a given installation and that installation will then be incorporated into this permit.

A common characteristic of the sites where the M101 spotting round fragments are located is that they are well within the installation boundary and are located in an impact area where access is strictly controlled. These impact areas contain a number of other hazards such as unexploded ordinance which require restricted access and additional training prior to entry. This limits the potential for inadvertent exposure and ensures members of the general public, to include Army civilians and soldiers, are not directly exposed to the material.

Item 4. Name Of Person To Be Contacted About This Application

Mario Owens

703-602-1342

Item 5. Radioactive Material:

a. Element and Mass Number: Depleted uranium (^{238}U, ^{235}U, and ^{234}U); mass number (92)

M101 spotting round. A total of 75,318 rounds were originally produced. "Each depleted uranium projectile body weighed 3,180 ± 25 grains" (USACE 2007). This equates to about 206 g or 0.45 lb. Given a composition of 92 percent depleted uranium and 8 percent molybdenum, 2926 grains or 190g of depleted uranium was contained within each round.

b. Chemical and/or physical form: Any

c. Maximum amount that will be possessed: 8000 Kg (17,637 lbs) of depleted uranium.

The M101 spotting round was manufactured and distributed under NRC License SUB 459. "In the 1970's, approximately 44,000 DU rounds were demilitarized under the Remington Arms license by firing into the 600-Yard Bullet Catcher." (Cabrera 2006) In addition, about 2000 rounds were fired at LCAAP in the 1960's for lot testing. As such, a total of about 46,000 rounds can be accounted for out of a total production of 75,318 leaving about 29,300 rounds for distribution to Army organizations. Details with regard to the specific number of rounds issued to a given installation, previously recovered from ranges or disposed of as radioactive waste is not currently known. Given 29,318 rounds each containing 206 grams of alloy equates to an actual maximum possession quantity of about 6040 Kg of alloy containing about 5560 Kg of depleted uranium.

Item 6. Purpose for Which Licensed Material will be Used:

This U.S. Nuclear Regulatory Commission (NRC) license application is for authorization to possess and manage depleted uranium present at US Army installations as a result of previous use of depleted uranium. Specific functions to be performed under the license will be limited to radiological surveys as necessary to fully characterize the nature and extent of contamination and, when appropriate, to obtain information necessary to support development of decommissioning plans. Depleted uranium possessed pursuant to this license may also be subjected to disposal by transfer to a properly permitted/licensed disposal facility.

Item 7. Individual(s) Responsible for Radiation Safety Program and Their Training Experience:

Executive management and the Radiation Safety Staff Officer (RSSO) will work as a team to oversee the Radiation Safety Program for this NRC license. The Army Radiation Safety Officer (ARSO) directs the Army Radiation Safety Program on behalf of the Director of Army Safety (DASAF) for all radiation sources used or possessed by the Army, to include those authorized under this license, and fulfills the functions specified in paragraph 1-4m, Department of the Army Pamphlet 385-24. In this capacity the ARSO promotes good radiation safety practices throughout the Army, provides radiation safety consultation and resolves radiation safety issues. The ARSO is a senior professional health physicist with extensive education, training and experience in health physics to include radiation protection aspects involving depleted uranium.

Pursuant to paragraph 1-4i, Department of the Army Pamphlet (DA Pam) 385-24, (Attachment 1) Commanders will ensure command compliance with conditions of this NRC license. This will be accomplished in part by designating, in writing, a trained Health Physicist/RSSO who will be responsible for day-to-day operation of the radiation safety program. The RSSO will have, as a minimum, a college degree at the bachelor level in a physical or biological science, mathematics or engineering and training and experience commensurate with the scope of the license to include specific training involving depleted uranium. Consistent with NUREG-1556, training will be from "a formal course designed for RSOs presented by an academic institution, commercial radiation safety consulting company, or a professional organization of radiation protection experts". Training will include the following subjects:

- Radiation Protection Principles
- Characteristics of Ionizing Radiation

- Units of Radiation Dose and Quantities
- Radiation Detection Instrumentation
- Biological Hazards of Exposure to Radiation
- NRC Regulatory Requirements and Standards
- Hands-on use of radioactive materials.

In addition to the RSSO, each Garrison Commander will designate, "in writing, a trained Garrison RSO" in accordance with paragraph 1-4l, DA Pam 385-24. The Garrison RSO "establishes and directs the garrison Radiation Safety Program (to include a written Radiation Safety Program document)" and performs the functions detailed in paragraphs 1-4p, q, and r, DA Pamphlet 385-24, as applicable. Further, each RSO "designee is trained (and periodically retrained, as necessary) to a level commensurate with the Radiation Safety Program scope and responsibilities. (see chap 7)." (paragraph 1-4k(2)(a), DA Pam 385-24). "Acceptable courses for unit and garrison radiation safety officers are offered by the U.S. Army Chemical School, MEDCOM, NGB, and Army Materiel Command licensees." (paragraph 7-2, DA Pam 385-24). The ARSO is responsible for identifying qualifying courses for Army RSOs and may approve alternate training if they meet equivalent standards of the above listed courses.

Resume for Primary RSO.

Gregory R. Komp, CHP, Senior Health Physicist
U.S. Army Safety Office
Office of the Chief of Staff United States Army
Commercial (703) 601-2405

1. Education:

a. M.S. in Health Physics (1992), Georgia Institute of Technology, Atlanta, Georgia.

b. B.S. in Chemistry (1978), Gonzaga University, Spokane, Washington.

2. Relevant Professional Experience:

a. January 2005 to Present. Army Radiation Safety Officer. Responsible for the Radiation Safety Program for the United States Army. Develops and implements policies to ensure the safe use of radioactive materials within the US Army and ensure Army and subordinate programs comply with applicable local, state and federal regulations.

b. January 1991 to January 2005 - U.S. Army Test, Measurement, and Diagnostic Equipment Activity (USATA) – Serves as the Senior Health Physicist for USATA. Responsible for establishing and maintaining the USATA Health Physics Services Program and ensuring all subordinate programs are in compliance with applicable local, state, and federal regulations. Responsible for organizing and managing all features of the USATA Secondary Reference/Transfer (S/T) level worldwide Radiation Safety Program. Responsible for radiation safety program evaluation, policy development, managing USATA S/T level licenses, and accident/incident investigation and control. Provides technical support to the U.S. Army worldwide radioactive waste consolidation program. Oversees the USATA ALARA program. Serves as a health physics consultant to the Defense Threat Reduction Agency (formerly On-Site Inspection Agency).

c. July 1985 to January 1991 - U.S. Army Chemical School and Fort McClellan, AL - Served as primary RSO on 3 NRC licenses. As a Health Physics Officer was responsible for a complete broad scope radiation safety program to include: dosimetry, monitoring, surveys, environmental studies, inventories, transportation, disposal, calibration, instrumentation, and safety training. Program encompassed over 1,000 sources, 50 radiation workers, and trained 3,000 students per year.

d. October 1982 to March 1983 - U.S. Army Chemical School and Fort McClellan, AL - As an Instructor/Doctrine Writer, presented instruction on basic nuclear physics, NRC regulations, and radiation detection instruments. This course is accepted as the primary qualification course for U.S. Army Radiation Protection Officers worldwide.

e. May 1979 to August 1980 - Fort Ord, CA - As a Nuclear emergency team (monitoring and survey team) leader, this team was responsible for locating and containing radioactive material from any nuclear accident occurring in the Western United States.

Resume for Primary RSO (Continued)

3. Experience with Radioisotopes (Jul 85 to Present):

a. Sealed/Plated Sources. Experience is with primarily calibration and reference sources. Activities range from microcurie check sources to a 1000 curie Cobalt-60 calibrator/irradiator, 3000 curie Cesium-137 calibrator/irradiator, plated alpha sources up to 20 microcuries.

b. Liquid Sources. Experience in using liquid radioactive material solutions to make sources for instrument performance checks, training, and quality assurance audits. Activities used were primarily in the microcurie to millicurie range.

c. Neutron Sources. Experience is with Californium-252, up to 40 micrograms; Plutonium/Be-238, up to 10 Curies; and Plutonium/Be-239, up to 20 Curies.

5. Professional Memberships:

a. Health Physics Society -

Governmental Section
Environmental Section
Radiation Safety Section
Symposia Committee Member, 1999 to 2001 (Current Chairman)

b. Alabama Health Physics Society -

Past President
Past Treasurer
Current Executive Council

6. Certification: Certified by the American Board of Health Physics

Item 8. Training for Individuals Working in or Frequenting Restricted Areas:
Paragraph 1-4k, DA Pam 385-24 mandates that each commander or director is responsible to ensure "that all personnel occupationally exposed to radiation receive appropriate radiation safety training commensurate with potential work place hazards". This requirement is consistent with and implements the requirements of 10 CFR 19 such that all individuals authorized unescorted access to restricted areas in which depleted uranium is present will receive training to meet the requirements of 10 CFR 19 prior to working in or frequenting such areas. This site-specific training will be performed by the Unit and/or Garrison Radiation Safety Officer or their designated representatives.

Item 9. Facilities and Equipment.

The Department of Defense (DOD) has a broad range of radiological facilities and equipment and associated capabilities to include a variety of different military and commercial Radiation Detection, Identification and Computation (RADIAC) instruments. DOD also has significant organic radioanalytical capabilities. Each U.S. Army Command has assigned RADIAC instruments (and qualified users) as needed to fulfill a variety of tactical and non-tactical nuclear and radiological missions. Although the specific instruments will vary to some extent, military RADIAC instruments generally available at all Army installations typically include the AN/VDR-2 Radiac Set and the AN/PDR-77 Radiac Set. Army organizations may also possess a wide variety of different types of commercial RADIAC instrumentation or older model sets such as the AN/PDR-27.

Although the limited emissions from depleted uranium are such that external dosimetry is not generally required, in the event that dosimetry devices are determined to be appropriate, such devices will be obtained from the U.S. Army Dosimetry Center, Redstone Arsenal, AL 35898-5000.

Item 10. Radiation Safety Program.

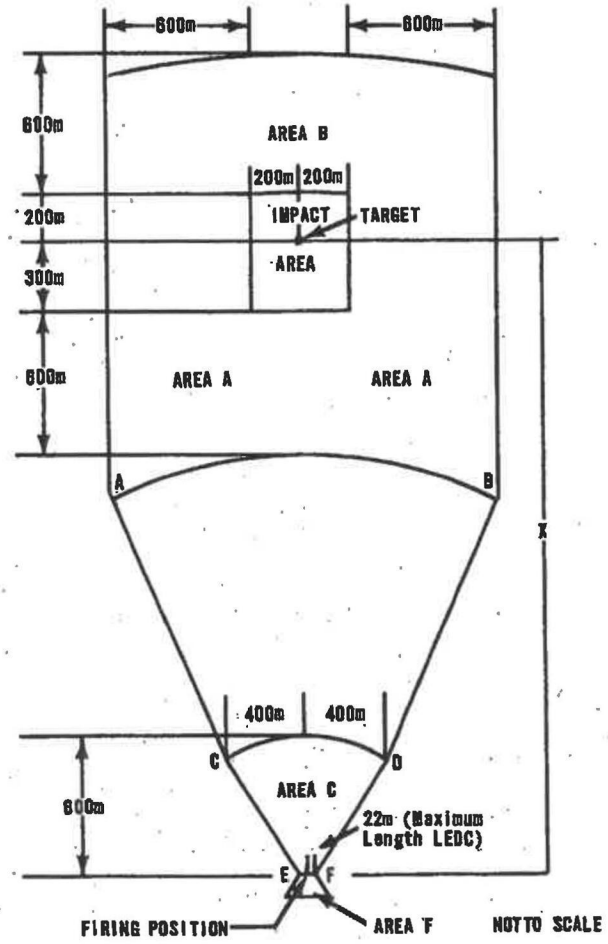
Army Regulation 385-10, entitled "The Army Safety Program", provides "policy on Army safety management procedures with special emphasis on responsibilities and organizational concepts." "This regulation applies to the Active Army, the Army National Guard/Army National Guard of the United States and the Army Reserve unless otherwise stated." Chapter 7 entitled "Radiation Safety Management" "prescribes DA safety policy and processes for the Army radiation safety function" (See Attachment 4). AR 385-10, Chapter 7, is augmented by Department of the Army Pamphlet (DA Pam) 385-24. DA Pam 385-24 "establishes procedures and guidance for the safe use, storage, licensing, disposal, transportation, safety design, and inventory control of ionizing and non-ionizing radiation sources. It also provides radiation exposure standards and dosimetry and accident reporting instructions. Its objective is to ensure safe use of radiation sources and compliance with all applicable Federal and Department of Defense (DOD) rules and regulations." (DA Pam 385-24, paragraph 1-1)

Paragraph 1-4, DA Pam 385-24 stipulates that Each Commander or Director or an organization requiring an RSO must have "Established written policies and procedures to ensure compliance with applicable Federal, DOD and Army radiation safety regulations and directives" and mandates

Individual(s) responsible for radiation safety program and their training and experience are listed in Item 7. Specific duties and responsibilities of Garrison RSOs, all RSOs and unit RSOs are

specified in paragraphs 1-4p, q, and r, respectively. The responsibilities of RSOs may not be transferred to other individuals. Many tasks and duties associated with managing the program may be assigned or delegated to other qualified individuals; however, the responsibility for these tasks and duties is with the RSO. NRC does recognize that a qualified individual will have to fill in for the RSO when the RSO will be away for short periods of time for professional conferences, vacation, or illness. However, this should not occur for extended or indefinite periods of time. Consideration must also be given to how the RSO will be contacted in the event of an emergency.

As derived from circa 1968 "Typical Davy Crockett Weapon System Range Layout," the impact area for the Davy Crockett is about 400m by 500m or about 200,000 m^2. Distribution of 560 Kg (0.2016 Ci) (assuming 10 percent of the total DU) of depleted uranium in surface soils (top 15 cm (6 inches) would result in distribution in a total of volume of 3.0 X 10^{10} cm^3.

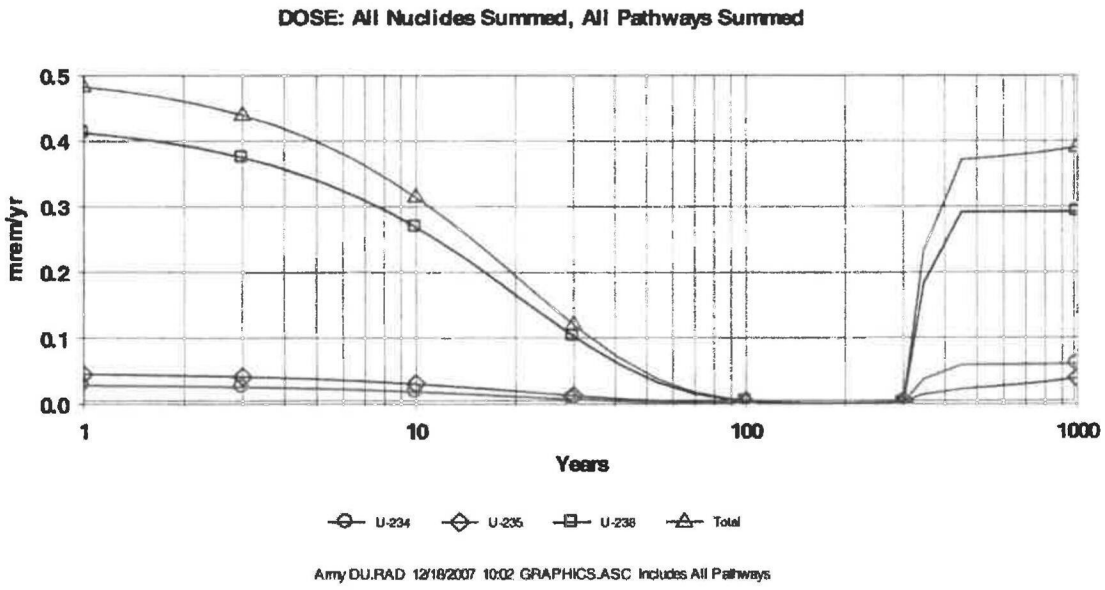


M28 Davy Crockett Weapon System Range Layout

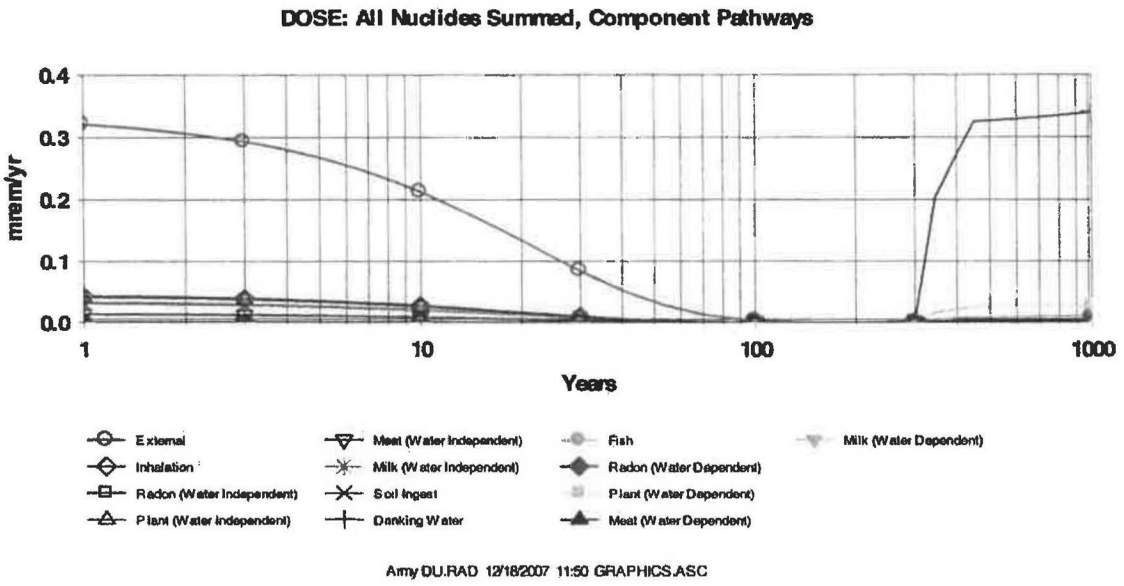
For a soil density of 1.5 g/cm^3 the soil concentration would equate to an average concentration of about 4.5 pCi/g if 10 percent of all rounds that are not currently accounted for were, in fact, fired at a given Army range used for Davy Crockett training. This concentration is significantly lower than the screening values for uranium (13, 8 and 14 pCi/g for ^{234}U, ^{235}U and ^{238}U, respectively) specified in Volume 2, Appendix H, NUREG-1757. Further, given that "Only the ground water pathways are affected by the total inventory of residual radioactivity, including that deeper than

15 centimeters. The direct, inhalation, ingestion and crop pathways are determined by concentration only, not total inventory." (Paragraph G.2.1, Volume 2, NUREG-1757). This should represent an appropriate bounding condition. As such, one can reasonably conclude that potential doses due to the presence of depleted uranium from the M101 Spotting Round used by the M28 Davy Crockett Light Weapon are expected to be much less than general public exposure limits specified in 10 CFR 20.1301 and are likely to be some small fraction of the 25 mrem/yr prescribed by 10 CFR 20.1402. (Preliminary assessment using RESRAD Version 6.3 results in an estimated dose of 0.5 mrem/yr for the stated criteria with model default parameters. If all unaccounted rounds were, in fact, fired at one of the Army's ranges used for Davy Crockett training, RESRAD Version 6.3 results in an estimated dose of 5 mrem/yr for the stated criteria with model default parameters. (These doses were derived using all RESRAD default pathways)

RESRAD Dose per Isotope (10% of Rounds at a Single Site)



RESRAD Dose per Pathway (10% of Rounds at a Single Site)



Consistent with the philosophy of maintaining radiation exposures as low as reasonably achievable, the Radiation Safety Program for depleted uranium from the Davy Crockett weapon system will consist of identification of the area(s) containing depleted uranium as a result of the use of the Davy Crockett weapon system; imposition of access restrictions with appropriate radiological monitoring requirements pending assessment of radiological conditions within a given affected area; the performance of scoping and characterization surveys to delineate the affected area (subject to precautions required due to the presence of unexploded ordnance); and investigation of remedial alternatives for the affected area. The NRC will be appropriately notified upon identification of areas containing depleted uranium from the Davy Crockett weapon system. In addition, actions to address the presence of depleted uranium will be fully coordinated with the NRC upon determination that contamination exists at a given installation or activity.

Migration of depleted uranium has been and continues to be extensively studied at a variety of military installations to include Aberdeen Proving Ground, MD, Jefferson Proving Ground, IN, Lake City Army Ammunition Plant and the Iowa Army Ammunition Plant. Available information indicates that depleted uranium metal generally remains in the immediate vicinity where initially deposited with limited migration over the periods that the materials have been present. The potential for DU to migrate depends on a number of factors to include chemical form of the uranium; chemical characteristics of soil including pH; proximity to surface water bodies; depth to groundwater; and topography/terrain. Given that migration would generally distribute uranium over a larger area thus reducing its concentration and that dose depends primarily on the average concentration, migration would tend to lower doses but to increase the potential for low level exposures.

Radiological surveys of areas determined to be contaminated as a result of the M101 spotting round will be subject to appropriate radiological investigations. These surveys will most commonly involve 2" X 2" or similar NaI(Tl) scintillation detectors. The scan MDC for depleted

uranium (0.34% U-235) as specified in Table 6.4, NUREG-1507, is about 56 pCi/g with a weighted cpm/uR/h of 3,790. Comprehensive studies have been performed to assess the ability of such detectors to assess the existence of depleted uranium metal. These studies indicate that a DU penetrator fragment as small as 0.37 cubic inches (6 cubic centimeters) can be located easily on the soil surface during a typical scan (assuming an investigation threshold of 2,000 cpm above background). Similar evaluation indicates that a DU penetrator fragment as small as 0.61 cubic inches (10 cubic centimeters) can be located easily below 2 inches (5.1 centimeters) of soil during a typical scan (again assuming an investigation threshold of 2,000 cpm above background). (SAIC 2005).

Since each site has unique geological and climatic conditions, whether a site specific environmental monitoring plan will be necessary for every installation where M101 spotting round fragments are located will be considered, subject to availability of funding. Any monitoring plan must be agreed to by both the Army and the NRC. Where feasible and where existing environmental monitoring plans are in place to demonstrate that other constituents of concern are not being transported off range, DU will be added to those monitoring efforts.

11. Waste Management.

Screening levels for clearance are defined in Table 5-2, DA-PAM 385-24. When depleted uranium contamination exceeding these screening levels are confirmed at an Army installation, then the Army will coordinate with the NRC in developing appropriate site-specific action incorporating the requirements of DA-PAM 385-24. When disposal is necessary, the material will be transferred to an authorized disposal site.

12. License Fees:

Category/Amount: 2B/$750 (Per telephonic communication with Ms. Brenda Brown, USNRC (301) 415-6055)

References:

ANL 2001 – Human Health Fact Sheet, Depleted Uranium, Argonne National Laboratory, October 2001

Cabrera 2001- 600-Yard Bullet Catcher Final Status Survey Report, Lake City Army Ammunition Plant, Lake City, Missouri, August 2001

Cabrera 2006 – Area 31 Final Status Survey Work Plan, Addendum to: Final Removal Action Memorandum and Work Plan – Housekeeping Removal Action, October 2006

PNNL 2000 - PNNL-MA-860, Battelle Pacific Northwest Laboratory Manual 860, Chapter 7, September 30, 2000

RHH 1970 – Radiological Health Handbook, U.S. Department of Health, Education and Welfare, Public Health Service, Rockville, MD, January 1970

SAIC (Science Applications International Corporation) 2005. - Field Sampling Plan, Site Characterization of the Depleted Uranium Impact Area, May 2005.

USACE 2007 – Archive Search Report on the Use of Cartridge, 20mm Spotting, M101 for Davy Crockett Light Weapon M28, USACE St. Louis District, May 2007

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SECY-00-0173

Site and Radiological Survey Histories

The Watertown Arsenal encompasses approximately 53 hectares (130 acres) along the north branch of the Charles River, approximately 11 kilometers (7 miles) west of Boston, Massachusetts. The Watertown Arsenal had been part of the Army Ordnance Department, from its inception in 1812, until the transfer of its functions to the Army Materials Command [now Army Research Laboratory (ARL)] in 1962. From 1946 to 1953, the Massachusetts Institute of Technology conducted a research program for the Manhattan Engineering District on African ore containing uranium.

In 1958, the Atomic Energy Commission (AEC) issued a source material license to the U.S. Army for the depleted uranium activities at the Watertown Arsenal. Locations of use were not specified in the license. However, based on historical assessments, the following Watertown Mall Areas were determined to have been used for source material activity: Building 34, which housed a uranium machine shop; a portion of Building 41, which contained a foundry that was used for uranium work; and, Building 421, which was used for experimental uranium oxide production with thorium used as crucible material, and later was used for depleted uranium projectile prototype research. Waste storage and processing activities, including burning depleted uranium in drums, was conducted in the Northeast Parcel, a 5-hectare (12-acre) site located near the Watertown Arsenal.

In 1968, the eastern half of the Watertown Arsenal, encompassing 24 hectares (59 acres) and 21 buildings, including the three facilities using licensed source material, was declared excess government property, and transferred to U.S. General Services Administration (GSA) and subsequently sold to the Watertown Redevelopment Authority (WRA). The area was renamed the Watertown Mall Area. The remaining western half of the Watertown Arsenal was renamed the Materials Technology Laboratory (also known as the Arsenal), which retained U.S. Nuclear Regulatory Commission (NRC) license SUB-238. In addition, the Northeast Parcel was accessed to the GSA in a radiologically contaminated state. GSA retained ownership of the Northeast Parcel, and it continues to be an Site Decommissioning Management Plan (SDMP) site.

The Watertown Mall Area, a Formerly Utilized Defense Site, or FUDS property, currently includes apartments [1.2 hectares (2.8 acres)], the Harvard Community Health Program Watertown Branch [1.3 hectares (3.1 acres)], the Arsenal Marketplace [7.7 hectares (19.1 acres)], an Ann & Hope retail department store [4.5 hectares (11.2 acres)], condominiums [0.7 hectares (1.6 acres)], Massachusetts Development Corporation land [3 hectares (7.46 acres)], and Arsenal Park [5.5 hectares (13.7 acres)], two Massachusetts Department of Environmental Protection (MADEP) - listed chemical disposal sites, and former Buildings 34, 41, and 421. These three buildings were razed in the mid-1970s after their transfer to the WRA, with only the concrete floor slabs, access driveways, and underground utility service trenches remaining. During the 1980s, these areas were redeveloped. The concrete pad of Building 34 was broken up, buried in an excavation pit 7.6 meters (25 feet) deep, and re-graded as a parking lot for the Arsenal Marketplace. The concrete pad of Building 41 was covered with 0.6-3 meters (2-10 feet) of fill, and re-graded as a parking lot for the Ann & Hope Store. The concrete pad for Building 421 was used as a foundation for tennis courts in Arsenal Park. Figure 1 depicts these areas as well as the connecting sewer systems from these former buildings. Gamma scanning surveys and soil sampling for radiological contamination were performed in some of the areas not involved with licensed activities (e.g., mall buildings,

recreational areas, and residential housing). No radioactive contamination was identified in the unaffected areas.

In 1967, the Army performed a radiological survey of the former uranium processing and machine shop areas in Buildings 34 and 41 to characterize the residual contamination in preparation for the transfer of the eastern portion of the Arsenal to the GSA. In 1967, it was reported that Building 421 was decontaminated under the supervision of the Army; however, records of the decontamination procedures and final radiation survey were not located during an extensive archival record review. During a records search in 1991-1993, decontamination procedures and final radiation survey records for Buildings 34 and 41 indicated radiologically contaminated equipment was removed and transferred or disposed of in accordance with regulatory requirements. One pre-decontamination survey noted radiation levels as high as 0.4 milliSievert per hour (mSv/h) [40 millirem per hour (40 mR/h)] in a pipe trench and 0.20 mSv/h (20 mR/h) in a drain line in Building 34. Several decontamination efforts were required, including jack-hammering cracks in concrete to remove discrete areas of fixed contamination. At the completion of these activities, all surface areas were below the residual radioactive release criteria used by the Army as specified by AEC in 1968. These criteria were more restrictive than the SDMP criteria for alpha radiation, and consistent with the SDMP Action Plan criteria and the ARL Decommissioning Plan criteria for beta and gamma radiation (which was approved by NRC in 1992 for the ARL/Mall Area site). The SDMP Action Plan criteria were used as the basis to evaluate the historical survey data.

From 1977 through 1981, the Argonne National Laboratory (ANL) performed radiological surveys of the remnants of the former Buildings 34, 41, and 421 under the Department of Energy's Formerly Utilized MED/AEC Sites Remedial Action Program. These reports were issued in 1980 and 1983. The U.S. Army Corps of Engineers' (hereafter, the Corps) Risk Assessments evaluated these survey results against the SDMP Action Plan criteria.

Building 421 pad contains three small areas of fixed radioactive contamination greater than 5,000 disintegrations per minute per 100 square centimeters (dpm/100 cm^2)(beta) in an area that is less than 5,200 cm^2 (out of a total concrete pad area of 22,630 meters $(m)^2$). These areas contained 220,000 dpm/100 cm^2 in two areas less than 100 cm^2 and 85,000 dpm/100 cm^2 in one area approximately 0.5 m^2. The fixed contamination was determined to be natural uranium. There was no fixed alpha contamination detected. All direct GM readings were at background levels , except for one direct reading at twice background. Soil core samples from eight perimeter locations were within the background values for natural uranium in this area and all ambient exposure-rate measurements were consistent with background. A water sample from the storm sewer was also consistent with background concentrations. ANL evaluated the contaminated spots and did not identify a significant risk, assuming that the contaminated spots were removed via jack-hammering. The Corps' Risk Assessment from 1996 concluded that although these spots exceeded the SDMP Action Plan criteria, the ANL evaluation was reasonable and the spots did not represent a significant risk to the public. As noted below, the Corps conducted gamma surveys of the tennis courts to attempt to locate the spots. However, all readings were consistent with background levels. Also, additional soil sampling was conducted in the Arsenal Park and tennis courts to determine if there was any washout of contamination. All soil samples were consistent with background levels.

Building 34 pad contained one small area of 6,000 dpm/100 cm^2 (beta) in an area not greater than 7,000 cm^2 (out of a total concrete pad area of 3,600 m^2). Under the elevated activity

criteria, which weights the activity for the contiguous 1 m^2, this area also meets the SDMP Action Plan criteria. Soil core sample results indicated 5 out of 15 soil corings from the perimeter of the pad exceeded natural background for uranium. The maximum soil activity reported was 0.6 Becquerels per gram (Bq/g) [15.5 picoCuries per gram (15.5 pCi/g)] uranium; however, the average contamination for the perimeter of Building 34 was less than 0.3 Bq/g (8 pCi/g), at least a factor of 4 less than the SDMP Action Plan criteria of 1.3 Bq/g (35 pCi/g) for depleted uranium. The site-wide average soil concentration was consistent with background.

No contamination was found on the Building 41 pad. However two thirds of the pad was covered with soil. Soil results were generally within background levels for uranium, except for one sample that showed 0.32 Bq/g (8.7 pCi/g) of uranium. Sludge and water samples were taken from a floor drain/sump and a sewer closest to the concrete pad for Building 41. The sludge and suspended solids from the water samples were reported as 0.4 Bq/g; 0.4 Bq/g; 0.07 Bq/g; and 0.2 Bq/g (10.2 pCi/g; 12.0 pCi/g; 1.8 pCi/g; and 5.8 pCi/g) of uranium, respectively. All soil, sludge, and suspended solids results were less than the SDMP Action Plan criteria for natural uranium, depleted uranium, and thorium. All ambient exposure-rate measurements were consistent with background.

After the ANL surveys, various surface and ambient exposure-rate surveys were conducted at several areas at the site. Soil samples were also collected. The results confirmed that no radiation levels above background were present. Sampling of sediments and gamma surveys of the available site sewer system were completed in 1996. Except for a radium anomaly from one sample location, all measurements and samples were reported as not in excess of natural background. Based on an extensive record review, and the surveys conducted in the 1990s, in September 1996, the Corps submitted a report entitled " Radiological Risk Evaluation Summary Report for the Former Watertown Arsenal" which evaluated risk using the SDMP Action Plan criteria; the ARL Decommissioning Plan Criteria (essentially the same as the SDMP Action Plan criteria); the MADPH radiological criteria of 0.1 mSv/year (10 mrem/year); and, the requirements of the MADEP Massachusetts Contingency Plan (the Comprehensive Risk Evaluation that evaluated both hazardous and residual radioactive material was submitted to MADEP in 1998). The results of the radiological risk evaluation indicated that, under current and future site conditions, no significant human health or ecological risks would be expected from residual radiological material at the site.

A Public Health Assessment for the Watertown Arsenal, including the Mall Area, was completed by the U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry (ATSDR) in February 1997. With respect to residual radioactive material, ATSDR evaluated exposures from contaminated subsurface soil and building remnants on the FUDS parcel and previous air releases of depleted uranium. ATSDR concluded that people are not currently being exposed, but that there was a potential for future possible exposure if workers unearthed radiologically contaminated piping that may have been left in place. The NRC staff concluded that the exposure scenario used by the licensee to estimate potential doses to future site inhabitants (i.e., a residential family farm scenario) is a more conservative scenario than one involving the excavation and disposal of the pipe and, as such, the doses estimated using the residential family farm scenario would be bounding.

In July 1998, the Corps, through its contractor, submitted the final "Phase II Comprehensive Site Assessment Report for the Former Watertown Arsenal FUDS property." Although it primarily evaluated the nature and extent of chemically hazardous material at the site, it provided

additional historical information and field observation data regarding underground piping and sewer systems to determine if any additional actions would be required to address potential radiological contamination. As summarized, a 1957 survey showed two sewer connections from Building 34, while a 1963 sewer map indicated one line that discharged to the sewer main (sample data from this location found no radiation, above background, in sediment samples, or dose rate measurements above background levels). No manholes from the former system were observed because the building foundation was destroyed and the ground beneath the former building was excavated to a depth of 7.6 meters (25 feet). It was assumed that all former sewer lines connected to the building were also excavated. Sewer lines associated with former Building 41 converged at Manhole 9 and discharged southward through a 5-centimeter (12-inch) line to the sanitary sewer line connected to the main sewer line at Manhole 106. Although Manhole 106 was sampled in 1996, Manhole 9 could not be opened. Redevelopment plans indicated that the old sewer lines under the building were plugged just above Manhole 9. Since the former building foundation was left in place, it is assumed that the underlying plugged sewer pipes were not removed. Sewer lines associated with the former Building 421 were also assumed to be plugged and left in place. Field observations indicated Manhole 134 from the old sewer line was inactive, but connected to Manhole 17. Sample results from 1996 did not identify any radioactive material contamination.

NRC staff also noted that the Redevelopment Plans stated that the existing drain lines were flushed before being plugged. Based on the sewer sampling done in 1996, and the field observations and historical review in 1998, only Manhole 9 needed further evaluation. NRC staff also noted that in a letter dated December 31, 1994, MADEP agreed with the Corps groundwater classification (GW-3) for this site (i.e., a non-Potential Drinking Water Source Area). No municipal or private wells obtain groundwater from this site or area.

To resolve the concern regarding the radiological condition of the sewer line from the former Building 41, NRC conducted an independent survey in July 1999. NRC Confirmatory Inspection Report No. 040-2253/99-02, dated October 4, 1999, indicated that most survey and sample results were consistent with environmental levels of uranium; however, two direct surface measurements were in excess of the SDMP Action Plan criteria for depleted uranium. To determine if this sewer line needed to be remediated, a dose assessment was requested and received by NRC in July 2000. The results demonstrated that the potential doses from the residual radioactive contamination were well below the NRC dose-based release criterion of 0.25 mSv/y (25 mrem/y) as specified in 10 CFR 20.1402.

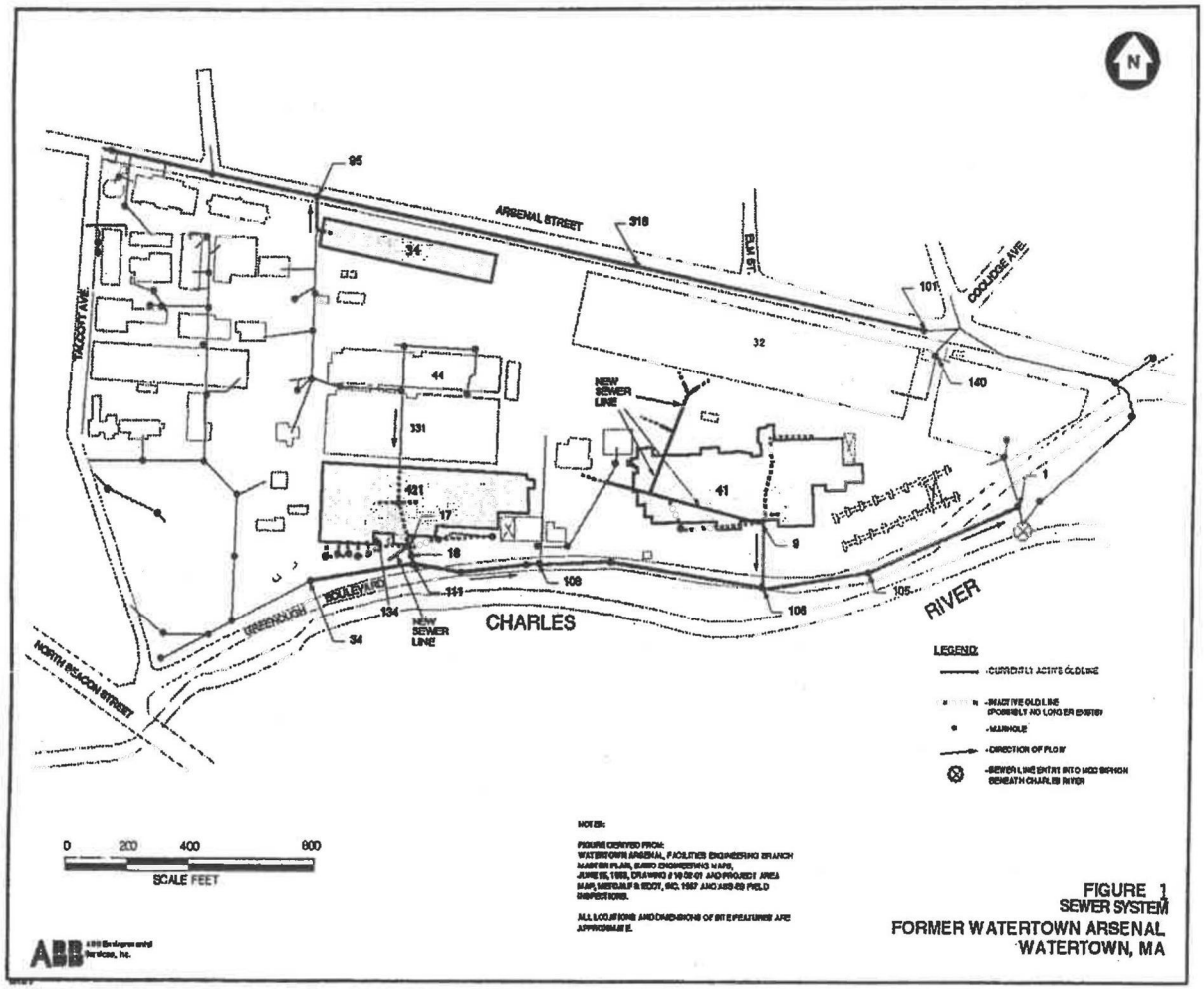


FIGURE 1
SEWER SYSTEM
FORMER WATERTOWN ARSENAL
WATERTOWN, MA

ATTACHMENT 1

ML071280443

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY JOINT MUNITIONS COMMAND
1 ROCK ISLAND ARSENAL
ROCK ISLAND, IL 61299-6000

REPLY TO
ATTENTION OF:

May 2, 2007

Safety/Rad Waste Directorate

Administrator
Nuclear Regulatory Commission
Nuclear Materials Licensing Branch
Region III
2443 Warrenville Road Ste 210
Lisle, Illinois 60532-4352

Reference docket number 040-08767

Dear Sir or Madam:

We request the Nuclear Regulatory Commission amend our SUC-1380 license and remove reference to soil from the Area 31 landfill of Lake City Army Ammunition Plant, Independence, Missouri. Cabrera Services, Inc., completed final status survey activities at Area 31 in November 2006 in accordance with the final status survey work plan transmitted to and approved by the Nuclear Regulatory Commission in October 2006.

During the final status survey field activities, Cabrera identified and removed four depleted uranium ammunition projectile bodies from the landfill waste staged at Area 31. These projectile bodies were in addition to the four found previously by ARCADIS, as discussed in the Work Plan, thus bringing the total number of projectiles bodies found at Area 31 to eight. The eight projectile bodies are currently stored in a B-12 metal container located at the Lake City Army Ammunition Plant Area 10 sand pile. We will complete a radioactive waste disposal action for the material in these containers at a later date.

Upon completion of final status survey activities at Area 31 and removal of the depleted uranium projectile bodies, ARCADIS shipped the waste to a local industrial waste landfill in Missouri. The final status survey data for the residual soils indicate that the site is now suitable for release for unrestricted use, without regard to the former presence of licensed radioactive material. We have enclosed a hardcopy of Cabrera's final status survey report, and a compact disc that contains back-up information to the hardcopy report.

The points of contact are Mr. Gary Buckrop and Mr. Mike Styvaert, AMSJM-SF, (309) 782-2969/0880, E-mail rock-amsjm-sf@conus.army.mil.

Sincerely,

Kristine K. Preston

Kristine K. Preston
Acting Director
Safety/Rad Waste Directorate

Enclosure

TECHNICAL MEMORANDUM

From: Barb Duletsky, Cabrera Services, Inc.

To: Eric Putnam, ARCADIS G&M, Inc.

Date: February 15, 2007

Subject: Results of Final Status Survey at Area 31, Lake City Army Ammunition Plant, Independence, MO - FINAL

EXECUTIVE SUMMARY

Final status survey (FSS) activities were conducted at Area 31 to support the Housekeeping Removal Action for the installation-wide operable unit (IWOU) at Lake City Army Ammunition Plant (LCAAP). Area 31 is a former waste dumpsite located within the LCAAP firing range, where depleted uranium (DU) projectile bodies were unexpectedly encountered during the course of waste removal activities. The purpose of the Area 31 FSS was to: 1) identify and remove any residual DU projectile bodies and peripherally impacted soils waste from the site, and 2) demonstrate whether the remaining soils are suitable for unrestricted release with respect to radioactivity, in accordance with Nuclear Regulatory Commission (NRC) requirements.

Field activities, which were conducted in November 2006, consisted of gamma walkover surveys (GWS) and soil sampling and analysis consistent with FSS requirements specified in the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM; NRC, 2000). Site-specific activities were implemented as described in the *Final Area 31 Final Status Survey Work Plan, Addendum to the Final Removal Action Memorandum and Work Plan – Housekeeping Removal Action* (*Work Plan*; CABRERA, 2006a), except as otherwise noted in Attachment 1. This memorandum presents the FSS results for the Area 31 excavation and waste pile footprints, as well as for the waste pile material itself.

A 100% GWS was conducted using a 2-inch (in.) by 2-inch (in.) sodium iodide (NaI) detector equipped with a global positioning system (GPS). The GWS results were used to identify regions of the site where surface radioactivity appeared to be elevated. The only regions of elevated activity identified during the GWS of the excavation and waste pile footprints coincided with areas where bedrock was at or close to the surface. It was assumed that the elevated readings were due to the presence of naturally occurring thorium, which is more abundant in rock than in soil. This assumption was confirmed by field screening results obtained using a portable soil analyzer.

Systematic soil samples were collected from the top 6 inches of soil in the excavation and waste pile footprints using a triangular grid pattern with 12-meter (m) spacing between sample locations. In addition, biased soil samples were collected from the locations of highest gamma

Enclosure

response, as measured during the GWS. Analytical results for the FSS support samples indicated no detectable DU in the native soil within the excavation or waste pile footprints.

The FSS of waste pile material was conducted in incremental one-foot lifts to ensure 100% survey coverage and even sample distribution. Elevated GWS results provided the basis for identification and removal of five separate pieces of radioactive material from the waste pile material. Remedial support soil samples were collected from directly beneath the radioactive items and shipped to the off-site laboratory for analysis. Upon removal of the sample material, the areas were scanned using a Geiger-Mueller (GM) pancake detector to ensure that all potential contamination had been removed and that residual radioactivity was consistent with natural background. In each case, removal of the sample volume alone was shown to be sufficient to remove any soil contamination discernable through the GM scan.

Analytical results from the systematic, biased, and remedial support soil sampling conducted on the waste pile material indicated only two sample locations with detectable DU. These samples were collected as remedial support samples from two of the locations where radioactive items were found. Gamma spectroscopy results were used to infer uranium-238 (^{238}U) concentrations of DU concentrations of 35.4 and 6.1 picocuries per gram (pCi/g) in the two samples. Alpha spectrometry results confirmed that the isotopic ratios were indicative of DU. Surface scans of each sampling location conducted after the sample material was removed indicated no remaining areas of elevated radioactivity.

Results of the FSS indicate that the waste pile material at Area 31 is suitable for release without regard to radioactivity. Neither direct radiation measurements nor analytical data for the FSS support samples, which are representative of these soils, indicate the presence of any remaining DU (i.e., licensed material) in the waste. The four DU projectile bodies and other radioactive item uncovered during the waste pile survey were removed from Area 31 and relocated to Area 10, the current LCAAP repository for licensed DU material. Analytical results for the remedial support samples collected from directly beneath these items indicate that small amounts of radioactivity were able to transfer from the DU projectile bodies to the soils immediately surrounding them. However, FSS results and confirmatory surface scans provided no evidence that any soil other than that which was in direct contact with the DU had been affected. Because the affected soils were remediated from the waste during collection of the remedial support samples, as confirmed by surface scans of the sample locations, it is concluded that no licensed radioactive material remains in the Area 31 waste.

Results of the FSS indicate that the residual soils remaining at Area 31 are suitable for release for unrestricted use, in accordance with NRC requirements set forth in 10 CFR 20.1402. Neither direct radiation measurements nor analytical data for the FSS support samples, which are representative of these soils, indicate the presence of residual licensed radioactive materials. In addition, comparisons to previously established background levels do not indicate any locations exhibiting radioactivity greater than background. In light of the information presented in this memorandum, it is recommended that a license amendment be sought from the NRC to release Area 31 for unrestricted use.

ML14118A463

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY JOINT MUNITIONS COMMAND
1 ROCK ISLAND ARSENAL
ROCK ISLAND, IL 61299-6000

REPLY TO
ATTENTION OF:

APR 22 2014

82 APR 2014

Safety/Rad Waste Directorate

Ms. Patricia Pelke
Chief, Materials Licensing Branch
US Nuclear Regulatory Commission, Region III
2443 Warrenville Road, Suite 210
Lisle, Illinois 60532-4352

Ms. Pelke,

We request renewal of our SUC-1380 license. Enclosed is Nuclear Regulatory Commission Form 313 and supplemental information for each block on the form. This renewal application incorporates amendments since the last renewal. Although we have made some administrative changes, the materials and activities covered by the license and our program procedures remain essentially the same.

Please direct questions or comments to Mr. Kelly Crooks, (309) 782-0338 or electronic mail address: usarmy.RIA.jmc.mbx.AMSJM-SF@mail.mil.

Sincerely,

Benjamin M. Nutt
Colonel, US Army
Chief of Staff

Enclosures

RECEIVED APR 2 8 2014

NRC FORM 313 (03-2013) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 06/31/2016

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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. *AMENDMENTS/RENEWALS THAT INCREASE THE SCOPE OF THE EXISTING LICENSE TO A NEW OR HIGHER FEE CATEGORY WILL REQUIRE A FEE.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

OFFICE OF FEDERAL & STATE MATERIALS AND
ENVIRONMENTAL MANAGEMENT PROGRAMS
DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING,

SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

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 JURISDICTIONS.

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

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [x] C. RENEWAL OF LICENSE NUMBER SUC-1380

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

Department of the Army
HQ Joint Munitions Command, Attn: AMSJM-SF
1 Rock Island Arsenal
Rock Island, IL 61299-6000

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Worldwide use

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Kelly W. Crooks

BUSINESS TELEPHONE NUMBER: (309) 782-0338

BUSINESS CELLULAR TELEPHONE NUMBER:

BUSINESS EMAIL ADDRESS: usarmy.RIA.jmc.mbx.AMSJM-SF@mail.mil

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 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. maiximum amount which will be possessed at any one time.

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

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

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

9. FACILITIES AND EQUIPMENT

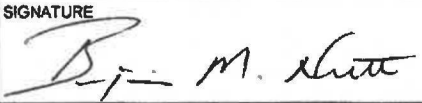
10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions*) *(See 10 CFR 170 and Section 170.31)* FEE CATEGORY: Exempt AMOUNT ENCLOSED $

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 , 36, 39, AND 40, AND THAT ALL INFORMATION CONTANED 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 C RIMINAL 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.

CERTIFYING OFFICER – TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
BENJAMIN M. NUTT Colonel, LG, Chief of Staff		21 APR 14

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED $	CHECK NUMBER	COMMENTS

APPROVED BY	DATE

INTRODUCTION

1. Headquarters, US Army Joint Munitions Command, formerly the US Army Field Support Command (see amendment 44, 14 September 2006), located at Rock Island, Illinois, has the logistical responsibility to provide ammunition to the US Joint Military Services (Army, Air Force, Navy, and Marine Corps). This license application is for the possession and handling of depleted uranium as cartridge penetrators.

2. This license application is a request for renewal of license number SUC-1380 in its entirety.

3. The Nuclear Regulatory Commission granted the original SUC-1380 license in June 1980. The Nuclear Regulatory Commission granted the last license renewal on May 10, 2004, with an expiration date of May 31, 2014.

4. The Army recognizes the jurisdiction of the Nuclear Regulatory Commission within the boundaries of the United States. Overseas, the Army will abide by Army regulations or host nation agreements.

5. In brief, this license application authorizes the following:

a. Possession of depleted uranium ammunition and components for; (1) storage and handling at Army locations worldwide as war reserve material for combat use by the US Joint Military Services and, (2) disassembly operations as approved by the US Army Joint Munitions Command.

b. Possession of depleted uranium fragments on the firing range at Lake City Army Ammunition Plant, Independence, Missouri.

6. This license application does not authorize firing ammunition containing depleted uranium components. Since depleted uranium ammunition is only uploaded in times of war or the threat of war, this license does not cover the upload of weapon systems.

7. Radiological hazards associated with the activities authorized by this license application are minimal and the Army will practice the concept of keeping exposure to radiation "as low as reasonably achievable."

Application for Nuclear Regulatory Commission
Source Material License for Possession of Depleted Uranium
as Component Parts of Ammunition Items

Index

ML111800468

DEPARTMENT OF THE ARMY
US ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
PICATINNY ARSENAL, NEW JERSEY 07806-5000

Bx2

RDAR-QES-F-RPO

20 JUNE 2011

MEMORANDUM FOR Mr. Dennis Lawyer, Nuclear Regulatory Commission (NRC)

SUBJECT: License Number SUB-348 Renewal Application 04006377

1. The U.S. Army Armament Research, Development and Engineering Center (ARDEC) requests renewal of NRC license SUB-348. This license renewal will allow continued use of depleted uranium and thorium to support research and development projects and operations performed at Picatinny Arsenal, NJ. The current license expires on 31 July 2011.

2. Please find attached a completed NRC Form 313: "Application for Materials License". License Fees (Section 12) will be forwarded via a Wide Area Workflow (WAWF).

3. Point of contact for this correspondence is the undersigned at (973) 724-8842, richard.w.lamoreaux@us.army.mil or Richard W. Flizar, Alternate Radiation Protection Officer, at (973) 724-3126, richard.w.flizar@us.army.mil.

Enclosure

RICHARD W. LAMOREAUX
ARDEC Radiation Safety Officer

DISTRIBUTION:
RDAR-D
RDAR-QES: Mr. Van Dyke
RDAR-QES-F: Ms. Vo
RDAR-QES-F: Mr. Reed
RDAR-RK

CF:
ARDEC Radiation Protection Office

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NMSS/RGN1 MATERIALS-002

NRC FORM 313 (3-2009) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 3/31/2012

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

APPLICATION FOR MATERIALS LICENSE

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DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

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LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

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

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2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
612 E. LAMAR BOULEVARD, SUITE 400
ARLINGTON, TX 76011-4125

04006377

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 JURISDICTIONS.

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

A. NEW LICENSE

B. AMENDMENT TO LICENSE NUMBER

✓ C. RENEWAL OF LICENSE NUMBER SUB-348

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

Department of the Army
U.S. Armament, Research, Development and Engineering Center
Picatinny Arsenal, NJ 07806

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED:

Picatinny Arsenal, NJ 07806

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Richard W. Lamoreaux

TELEPHONE NUMBER

(973) 724-8842

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 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

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

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

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

9. FACILITIES AND EQUIPMENT

10. RADIATION SAFETY PROGRAM

11. WASTE MANAGEMENT

12. LICENSE FEES (See 10 CFR 170 and Section 170.31)
FEE CATEGORY 2C AMOUNT ENCLOSED $

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, 36, 39, 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.

CERTIFYING OFFICER (Type/Printed Name and Title)
GERARDO J. MELENDEZ, Director, ARDEC

SIGNATURE

DATE 22 Jan 2010

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		

APPROVED BY DATE

575463

ITEM 5; RADIOACTIVE MATERIAL

a. Element	b. Chemical/Physical Form	c. Maximum Amount of Any One Time (Kilograms)
A. Natural Uranium	Ores, Chemicals. Laboratory Chemicals of Uranium Salts and Rock Samples.	100
B. Uranium Depleted in the U-235 Isotope	Depleted Uranium Metals, Oxides, Chemicals, < 0.7 % U-235. Metals in solid form; also in soils and water being evaluated.	11,000
C. Thorium	Metals, Chemicals, Salts. Ores, Solid and Powder Metals, Laboratory Chemicals.	20

ITEM 6; PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED

Lines A, B and C - Basic and applied research for items of interest to the U.S. Army. Material will be used for research and development purposes, or developed as component parts of weapon systems or munitions at the U.S. Army Armament, Research & Development Center, Picatinny, New Jersey.

ML011360418

DEPARTMENT OF THE ARMY
UNITED STATES ARMY TANK - AUTOMOTIVE AND ARMAMENTS COMMAND
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
PICATINNY ARSENAL, NEW JERSEY 07806-5000

April 30, 2001

Radiation Protection Office
System Safety Group
Quality Evaluation & Safety Team
Quality Engineering Directorate

Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission – Region I
475 Allendale Road
King of Prussia, Pennsylvania 19406

Dear Sir / Madam,

As a follow-up to our correspondence of April 24, 2001 (reference Docket No. 04006377; Control No. 129602) please find enclosed for your evaluation the completely revised renewal application for source material license, SUB-348. This revised application encompasses and, in turn, consolidates all of the pertinent conditions of prior license amendments through amendment no. 24. Also included in this submission is an updated Radiation Safety Officer Certification (pg. 9) and an updated ALARA program (pgs. 79-80) for our installation, both contained within this renewal application, as well as an updated Statement of Intent (enclosed) for decommissioning considerations specific to facilities and equipment that fall under this license.

Should you have any technical questions concerning this matter please contact the undersigned at (973) 724-3126 / 3742, or email at rfliszar@pica.army.mil .

Sincerely,

Richard W. Fliszar

Richard W. Fliszar
TACOM-ARDEC Radiation Protection Officer

Copies Furnished (w/o encl):

AMSTA-AR-PSS (Mr. O.T. Perry – Chairman, IRCC)
AMSTA-AR-QAW (Messrs Kraig Rauch / James Elliott)
Commander, HQ U.S. Army Materiel Command, ATTN: AMCSF-P (Mr. John Manfre)
Commander, HQ U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-CS-CZ (Ms. Karen McGuire)

KAD

STATEMENT OF INTENT

The U.S. Army Tank-automotive and Armaments Command, Armament Research, Development and Engineering Center (TACOM-ARDEC) located at Picatinny Arsenal, New Jersey is licensee under NRC license number SUB-348.

TACOM-ARDEC, as licensee under the foregoing NRC license, is responsible for providing financial assurance on decommissioning costs, which would be required if TACOM-ARDEC were to discontinue any or all operations involving these NRC licensed activities.

The Commanding Officer of TACOM-ARDEC, signatory on the foregoing NRC license, will assure that whatever funds required will be programmed through budgetary procedures in the amounts prescribed in 10 CFR part 40, or in appropriate funding plans, for such decommissioning. TACOM-ARDEC's past performance has demonstrated its commitment to this requirement through the decommissioning of various facilities on post covered by either this or other NRC licenses issued to this installation. The Commander is responsible under Army Regulation 210.10 for all activities assigned to or under the jurisdiction of the installation and for ensuring that requisitions and estimates for allotment of funds are properly prepared and submitted.

The funds needed for decommissioning facilities covered under this license, currently estimated to be $715,000.00, will be requested sufficiently in advance of decommissioning activities in order to prevent undue delay of those activities.

This is an originally signed duplicate.

William M. Lenaers
Brigadier General, U.S. Army
Commanding

Date 30 APR 2001

AMSTA-AR-QAW-R April 27,2001

MEMORANDUM FOR RECORD

SUBJECT: TACOM-ARDEC Decommissioning Cost Estimate for Facilities Covered under U.S. Nuclear Regulatory Commission License No. SUB-348 (Updated 27 April 2001)

1. At this time the facilities at TACOM-ARDEC presently covered under U.S. Nuclear Regulatory Commission source material license no. SUB-348, which would require some degree of actual decommissioning, if and when radioactive material related work were to permanently cease in the facility, include buildings 315, 318 and 611B. This assessment is based on either the type of work which does (Bldg. 315) or had been carried out (Bldg. 611B) in the respective facility, or the circumstances surrounding that facility at this time (i.e. Bldg. 318 – discovery of DU–contaminated machinery within the facility).

2. This is not to say that other facilities covered under this license, such as the ammunition storage magazine at Bldg. 619, would not require some degree of survey work (i.e. Final Status type surveys), following permanent cessation of radioactive material operations, as part of the close out process. However, based on the type of operation and survey results to date, unless something unforeseen were to happen in one of these other buildings, that would result in gross radioactive contamination to the facility, no formidable decontamination efforts would appear necessary for those structures.

3. Rather than carry out a paper exercise, as was done in the past, to estimate the present projected decommissioning costs for those facilities presently covered under the SUB-348 license, the undersigned has chosen another approach, which is believed to also be a reasonable manner for arriving at this estimate. Based on information provided by the Operations Support Command, Radioactive Waste Office, at Rock Island, Illinois the firm fixed cost, which has been established with the contractor they have hired to decommission Bldg. 611B, and arrange for the disposal of the DU contaminated machinery in Bldg. 318 along with an anticipated final status survey of that facility, is on the order of $235,000.00. This dollar amount is the figure to actually carryout the decommissioning work required for these two facilities. In addition, it would be reasonable to equate the estimated cost to decommission Bldg. 315, in its present state, with the actual cost inquired when Bldg. 316 was decommissioned several years ago. The decommissioning cost for Bldg. 316 was approximately $300,000.00. This dollar amount (with an additional 10 % applied for the purpose of recognizing an inflation factor to take into account for future considerations) is therefore added to the above figure for Bldgs. 318 / 611B, to arrive at a total estimated decommissioning cost.

4. Therefore, the present estimated decommissioning cost for the above three depicted facilities covered under the SUB-348 license is on the order of $565,000.00. By adding an additional $150,000.00 (with reference to 10 CFR 40.36(b)(2)) to that estimate to address the cost of the projected final status surveys and, if necessary, minor decommissioning efforts of the other facilities presently covered under this license, the total overall estimated cost to decommission the facilities presently covered by SUB-348 license would be $715,000.00.

Prepared by: Richard W. Fliszar Date: April 27, 2001
Richard W. Fliszar
TACOM-ARDEC Radiation Protection Officer

NRC FORM 313 (8-2000)
10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIAL LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 08/31/2002

Estimated burden per response to comply with this mandatory collection request: 7.4 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0000), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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. 040-06377

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

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, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION
NUCLEAR MATERIALS SAFETY BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

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

SAM NUNN ATLANTA FEDERAL CENTER
U. S. NUCLEAR REGULATORY COMMISSION, REGION II
61 FORSYTH STREET, S.W., SUITE 23T85
ATLANTA, GEORGIA 30303-8931

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
801 WARRENVILLE RD.
LISLE, IL 60532-4351

X

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-8064

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 JURISDICTIONS.

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

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [X] C. RENEWAL OF LICENSE NUMBER SUB-348

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

Department of the Army
U.S. Army Tank-automotive & Armaments Command, Armament Research, Development and Engineering Center,
Picatinny Arsenal, NJ 07806-5000

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Picatinny Arsenal, NJ 07806-5000

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Mr. Richard W. Fliszar

TELEPHONE NUMBER

(973)724-3126/3742

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 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.

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8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AEAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES *(See 10 CFR 170 and Section 170.31)*

FEE CATEGORY | AMOUNT ENCLOSED $

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

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, 36, 39, 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.

CERTIFYING OFFICER – TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
WILLIAM M. LENAERS, Brigadier General, USA Commanding		30 APR 2001

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED $	CHECK NUMBER	COMMENTS
APPROVED BY				DATE	

129602

AD

AD-E402 007

Contractor Report ARQED-CR-03001

RADIOLOGICAL CHARACTERIZATION OF BUILDING 611B DEPLETED URANIUM FIRING RANGE CHARACTERIZATION

Thomas J. O'Dou, CHP
Gutierrez-Palmenberg, Inc. (GPI)
333 North Rancho Drive
Las Vegas, NV 89106

Joseph A. Fabiano
Project Engineer
ARDEC

June 2004

ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER

Quality Engineering and System Assurance

Picatinny, New Jersey

The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.

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REPORT DOCUMENTATION PAGE	Form Approved OMB No. 0704-01-0188

1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (*From – To*)
June 2004	Technical	April to May 1997

4. TITLE AND SUBTITLE

Radiological Characterization of Building 611B - Depleted Uranium Firing Range Characterization

5a. CONTRACT NUMBER
DAAA09-95-G-0017

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHORS

Thomas J. O'Dou, Gutierrez-Palmenberg, Inc.
Joseph A. Fabiano, Project Engineer, ARDEC

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Gutierrez-Palmenberg, Inc.
333 North Rancho Drive
Las Vegas, NV 89106

ARDEC, QESA
Nondestructive Eval, Research & Engr
(AMSRD-AAR-QES-D)
Picatinny, NJ 07806-5000

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

ARDEC, EM
Technical Research Center (AMSRD-AAR-EMK)
Picatinny, NJ 07806-5000

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
Contractor Report ARQED-CR-03001

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Building 611B testing facility at the Armament Research, Development and Engineering Center (ARDEC), Picatinny, New Jersey was used for firing operations and ballistics testing of small scale depleted uranium (DU/U-238) and/or staballoy kinetic engery penetrators and storage from July 1979 to October 1984. Uranium-238 and its short-lived daughters are the only radionuclides of concern. Subsequent to the approval of the Guitierrez-APalmenberg, Inc. (GPI's) drafts of a Project work plan, health and safety plan, and quality assurance plan to ensure compliance with the Nuclear Regulatory Commission license conditions, all pertinent regulations and permits, the characterization survey ended after 24 days with the demobilization of GPI on 13 May 1997. This radiological characterization report provides the information needed to decommission and remediate the Building 611B testing facility, which has not been used for DU munitions testing since the end of 1984, so as to remove it from ARDEC's SUB-348 license and free release it from radiological control.

15. SUBJECT TERMS

Radiological characterization report Target room ^{238}U ^{234}TH ^{234}Pa Thorium
Building 611B Staballoy tesing range Depleted uranium (DU) firing range tunnel Protactinium
NRC license number SUB-348

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Joseph A. Fabiano
U	U	U	SAR	200	19b. TELEPHONE NUMBER (Include area code) (973) 724-3742

ACKNOWLEDGMENTS

As a result of the effort by Gutierrez-Palmenberg, Inc. (GPI), Joseph Fabiano of the Armament Research, Development and Engineering Center (ARDEC), Picatinny, New Jersey and Mike Styvaert of the U.S. Army Field Support Command (FSC), formerly the Industrial Operations Command (IOC), Rock Island, Illinois, the "Building 611B Testing Facility" consisting of building 611B, its accessory structures, and associated grounds underwent a characterization study to determine the concentration and distribution of depleted uranium (DU) in accordance with the work description of contract DAAA90-95-G-0017. The intention is to eventually have the Testing Facility not only decommissioned and remediated, but also to have it removed from ARDEC's SUB-348 license and free release it from the Nuclear Regulatory Commission and radiological control.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
801 WARRENVILLE ROAD
LISLE, ILLINOIS 60532-4351

July 11, 2003 ML031960354

James R. Persoon, Ph.D.
Radiation Safety Officer
Director, DU Facilities Decommissioning Project
Alliant Integrated Defense Company, LLC (ATK)
Twin Cities Army Ammunition Plant
4700 Highway 10, Suite F
Arden Hills, MN 55112

SUBJECT: NRC INSPECTION RECORD 04007982/2003-002(DNMS)
ALLIANT INTEGRATED DEFENSE COMPANY, LLC (ATK)

Dear Dr. Persoon:

This refers to the inspection conducted on May 19-23, 2003, at your facility located at the Alliant Techsystems' Twin Cities Army Ammunition Plant, New Brighton, Minnesota. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. Specifically, the inspectors discussed the inspection findings with you and members of your staff. An additional exit interview was conducted on June 11, 2003, to discuss the results of the NRC's independent soil sample analyses.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation was related to a failure to control licensed material at your Elk River Facility. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copies to the Regional Administrator, Region III, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your

response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Christopher G. Miller, Chief
Decommissioning Branch

Docket No. 04007982
License No. SUB-971

Enclosure: Inspection Report 04007982/2003-002(DNMS)

cc: Dr. Christine Ziebold

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.	04007982
License No.	SUB-971
Report No.	04007982/2003-002(DNMS)
Licensee:	Alliant Integrated Defense Company, LLC
Facility:	Twin Cities Army Ammunition Plant Building 502
Location:	Twin Cities Army Ammunition Plant Building 502 MN30-2530 New Brighton, MN 55112
Dates:	May 19-23, 2003, with continuing NRC review through June 11, 2003
Inspectors:	Michael LaFranzo, Radiation Specialist Eugenio Bonano, Radiation Specialist Rafael Rodriguez, Radiation Specialist
Approved by:	Christopher G. Miller, Chief Decommissioning Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Alliant Integrated Defense Company, LLC
NRC Inspection Report 04007982/2003-002(DNMS)

During a site inspection on the week of May 19, 2003, the inspectors performed the following actions:

- The inspectors obtained three soil samples, which were sent to the Oak Ridge Institute of Science and Education (ORISE) for analysis. Of those three samples, no sample exceeded the licensee's composite sample contamination limit. (Section 1.1)

- The inspectors conducted radiological surveys of a portion of the roof on Building 502. In the areas surveyed, the inspectors found no areas which exceeded the NRC release limits. (Section 1.2)

- The inspectors conducted radiological surveys in several areas within Building 502. The inspectors did not identify residual contamination above the NRC release limits. (Section 2.0)

- In May 2003, the licensee identified a depleted uranium penetrator at the Elk River facility. The NRC terminated this facility from the license in a previous amendment. The licensee's failure to control licensed material is a violation of NRC requirements. In accordance with the Enforcement Policy, the NRC has characterized this violation as Non-Cited. (Section 4.0)

Report Details

1.0 Exterior Radiological Surveys

1.1 Soil Sampling (83890)

a. Scope

The NRC reviewed and observed the licensee's soil sampling procedure and obtained soil samples for independent radiological analysis by the Oak Ridge Institute for Science and Education (ORISE) for independent radiological analysis to verify the licensee was in compliance with NRC approved release limits.

b. Observations and Findings

The inspectors obtained three (3) independent confirmatory soil samples which were sent to ORISE for analysis. The results of the ORISE analyses are documented below in Table A. Each sample was collected from a different grid, with each grid a 10 meter by 10 meter square section of ground.

Table A

Sample No.	Grid Location	Composite or Single Sample Collection	Uranium-235 Concentrations (pCi/g)[a]	Uranium-238 Concentrations (pCi/g)[a]
1	N10E50	Composite	0.01+/-0.08[b]	2.41+/-0.55
2	N30E90	Composite	-0.01+/-0.05	0.76+/-0.36
3	N40E90	Composite	0.07+/-0.06	1.30+/-0.38

[a]Typical (minimum detectable concentrations) MDCs for the isotopes in this table are 0.11 pCi/g for Uranium-235 and 0.41 pCi/g for Uranium-238.
[b]Uncertainties represent the 95% confidence level, based on total propagated uncertainties.

The inspectors collected all samples as composite samples, taking each sample in accordance with the licensee's soil sampling procedure. Composite samples were those taken as a composite of five separate samples taken in an equidistant "X" pattern within the grid.

During a previous inspection, NRC inspectors identified that elevated levels of Uranium-238 contamination were present in grid N10E50. The licensee's procedure SEC-EM-305, "Soil Sampling," required that if a composite soil sample was greater than 7 pCi/g, a further analysis and/or remediation would be performed by the licensee. The licensee remediated grid N10E50 and took additional soil samples. The samples analyzed by the licensee did not show elevated levels of uranium in the soil. The NRC confirmatory survey of that area confirmed that residual contamination was less than the release criteria, which was 35 pCi/g.

c. Conclusions

During the site inspection, the inspectors obtained three (3) soil samples, which were sent to ORISE for analysis. Of those three (3) samples, none exceeded the licensee's composite sample contamination limit.

1.2 Exterior Radiological Surveys (83890)

a. Scope

The inspectors conducted confirmatory radiological surveys on selected portions of the roof of Building 502.

b. Observations and Findings

The inspectors conducted radiological confirmatory surveys on a portion of the Building 502 roof. Specifically, the area surveyed was directly above reference grids Z10, Z11, Z12, and Z13. The inspectors used the following radiation detection instrumentation during the radiological surveys: Ludlum Model 2241-2 (NRC Tag No. 061687) with pancake probe Ludlum Model 44-9 (Serial No. PR110251); Ludlum Model 3 (NRC Tag No. 24616G) with pancake probe Ludlum Model 44-9 (Serial No. PR086316); and Ludlum Model 3 (NRC Tag No. 246186) with pancake probe Ludlum Model 44-9 (Serial No. PR086317). The grid reference denotes the area immediately to the northeast of the reference. These specific grids were chosen for confirmatory surveys because the licensee had identified the possibility of elevated radioactive contamination in those areas during previous surveys. The inspectors conducted radiological surveys using GM pancake survey instruments with audio capabilities.

Although the inspectors identified small areas of elevated contamination, the inspectors did not identify any residual fixed contamination above the release criteria of 5000 disintegrations per minute per 100 square centimeters (dpm/100 cm^2) or loose surface contamination above the release criteria of 1000 dpm/100 cm^2.

c. Conclusions

The inspectors did not identify any radiological contamination above the NRC release limits for unrestricted use.

2.0 Interior Radiological Surveys (83890)

a. Scope

The inspectors performed radiological surveys in a representative area within Building 502 to confirm that the licensee had decontaminated previously contaminated areas and that unaffected areas did not have radiological contamination.

b. Observations and Findings

During the inspection, the inspectors performed radiological confirmatory surveys of a representative portion of the interior of Building 502. The inspectors used

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

ML023370482

1 November 2002

MEMORANDUM FOR U.S. NRC, Region IV
Division of Nuclear Materials Safety
Attn: Ken Brockman, Director

NOV 0 [illegible]

FROM: AFMOA/SGZR
110 Luke Avenue, Room 405
Bolling AFB DC 20332-7050

SUBJECT: Clarification Request for C-74L Decommissioning Plan

Attached, you will find two documents that provide clarification to several items related to the C-74L decommissioning plan, Elgin AFB, Florida. Range C-74L is an active firing range in which Air Force munitions are tested. The area is contaminated with depleted uranium debris. NRC Region IV requested, via phone, additional information after an initial review of the range decommissioning plan.

If you have any questions, please contact me at 202-767-4307 or e-mail, david.pugh@pentagon.af.mil.

DAVID L. PUGH, Capt, USAF, BSC
Health Physicist, Radiation Protection Division
USAF Radioisotope Committee Secretariat
Air Force Medical Operation Agency
Office of the Surgeon General

Attachments:
1. NRC Document and Clarification Request for C-74L Decommissioning Plan
2. MDC Document

NRC Document and Clarification Request for C-74L Decommissioning Plan

1. **The DCGL for the soil is 600 pCi/gm. Please provide a copy of the calculation.**

   The $DCGL_w$ of 500 pCi/gm was determined using the RESRAD program in 1999. The parameters used in the RESRAD program were developed and approved by the Eglin Low Level Radioactive Material (LLRM) Partnering Team during their meeting in March 1999. A compilation of the RESRAD parameters used and a RESRAD run using RESRAD version 6.0, which uses those parameters is provided as Attachment 1 titled, *Compilation of RESRAD Parameters for Low-Level Radioactive Materials Depleted Uranium Investigations*. The $DCGL_{emc}$ (44 kcpm) using a FIDLER is equivalent to the $DCGL_w$ for a small area. Currently all FIDLER readings below one half 44 kcpm will be investigated and the DU fragment removed.

   The lifetime excess cancer risk of 3 E-04 and a dose limit of 25 mrem/yr. The DU contamination at RW-41 Test Area C-74L is not a homogenous mixture as used by RESRAD to calculate dose. DU contamination at C-74L exists as hot spots or small hot areas throughout the controlled area. The hot spots/areas are caused by DU fragments and particles predominately from 1 to 50 grams lying in the top 6 inches of soil.

   The $DCGL_w$ provided is for the industrial scenario, additional radiological surveys and use of a residential $DCGL_w$ would be required prior to releasing the site for residential use. A new final status survey would be required. Unexploded ordnance concerns currently do not allow for the unrestricted use of the site.

2. **The MDCR for the area is 14.7 pCi/gm. Please provide a copy of the calculation.**

   The MDC calculation is provided as Attachment 2 in a document titled, "*Establishing the Minimum Detectable Concentrations of Depleted Uranium Penetrator Fragments At Eglin AFB Ranges Using The Field Instrument For The Detection of Low Energy Radiation (FIDLER).*

   MARSSIMS provides the equation for determining the MDCR.

3. **What is the proposed background for the soil, the building, and water?**

   The proposed background for the soil is as follows:

Soil Background DU Level:	0.06 pCi/g to 0.7 pCi/g
FIDLER Soil Background Reading:	5 kcpm
Gross Alpha Groundwater:	< 1.0 pCi/L
Total Uranium Water Well:	- 24.41 pCi/L

   Note: USACE will provide the background readings for the building.

4. **What is the size of the restricted area?**

   The size of the restricted area is approximately 174,000 square feet or 3.99 acres. Attachment 3 is a Figure, which shows the controlled area at the site as the Compound. The compound is the radioactive material restricted area, which is being remediated.

5. **There appears to be a disagreement about the number of water wells in the vicinity of the site. The NRC could not identify where they found discrepancies in the number of water wells.**

   The paragraph in question was wrong. There are only two drinking water wells located within one mile of Test Area C-74L. The information provided by one of the references (Becker and others; 1990) indicating the C-74L water well was 58 feet deep was in error. The water well at C-74L contained in building number 9373 is 644 feet deep. The only other drinking water well within one mile of Test Area C-74L is located approximately 0.5 miles away at Test Area C-74L. This drinking water well has been abandoned and is no longer used.

   The hydrogeology paragraph provided in question 9 below correctly describes the water wells located within one mile of Test Area C-64 and the makeup of the two aquifers located beneath the site.

6. **The document mentioned that a well house was built after DU testing. Was the well house constructed on contaminated soil?**

   The soil under the well house was not surveyed for radioactive material prior to the well house being built. DU fragments have been found in locations around the well house. The soil under the well house was not surveyed as part of the final status survey performed by USACE in September 2002.

7. **Please elaborate on the transportation and disposal procedures for the waste.**

   This information will be provided by AFIERA, Brooks AFB, Texas.

8. **Please describe the chemical forms of the radionuclides.**

   The waste DU was in the form of 30 mm DU penetrators. The 30 mm DU penetrators are a alloy containing mainly depleted uranium. A complete 30mm penetrators weights approximately 300 grams. The resulting waste depleted uranium is in the form of solid uranium oxide and possible uranium metal in the inner core of a larger DU fragment.

9. What is the nearest resident location to the firing range?

The Eglin AFB Reservation surrounds the test area on all sides. The nearest possible residential location is approximately 3.6 miles away northwest of the site. Based on current dose assessments members of the public will not receive any radiation exposure from Test Area C-74L due to DU contaminated soil or from future DU remediation operations.

10. Please describe the meteorological, climatological, geological, and seismological conditions of the area.

Climatological and Meteorological Conditions

Eglin AFB has a humid, semitropical climate. Winters are mild, with occasional frost between November and February. Average annual rainfall at the National Weather Service Station at Niceville, Florida is 63.34 inches. The annual rainfall since 1931 has ranged from a low of 31.01 inches in 1954 to a high of 95.43 inches in 1975. July and August are the wettest months, with 8.7 and 7.26 inches respectively. Mean annual temperature is 66.2°F; mean monthly temperature ranges from 49.9°F to 80.8°F. July is the hottest month, with a mean maximum temperature of 90.8°F and mean minimum temperature of 70.9°F, and January the coldest month, with a mean maximum temperature of 61.6°F and a mean minimum temperature of 38.2°F.

Rainfall occurs as a result of both thunderstorms and frontal-type weather systems. A frontal-type system is due to the convergence of polar and tropical air masses and is associated with a low-pressure system. A thunderstorm occurs when warm, onsite air rises high in the troposphere and then cools, releasing its condensed moisture. Local thunderstorms frequently occur in late afternoon or evening during the summer months of June through September. Thunderstorms can be quite intense but are generally of short duration. Frontal storms, which usually occur during the winter months, produce showers of lower intensity and longer duration than thunderstorms and cover a large geographic area. The majority of rainfall generally falls during the summer months. The wettest month is July and October is the driest month.

Tropical storms and hurricanes can drop heavy rain. These storms occur during the months of June through November, with over half of them during the month of September. September hurricanes of 1906, 1950, and 1953 each dropped 12in of rain over the Choctawhatchee Bay area.

Current climatological conditions for the months of October through December are provided as attachment 4.

Seismological Conditions

Florida is classified as a stable geological area. This means that, with respect to probable damage from the largest expected distant earthquake, some areas may experience tremors, with only minor damage, such as broken windows or glassware.

Florida does not have any volcanoes or documented active faults, which are the two geological events, that cause earthquakes. No tremors were reported by Gainesville seismographic station from December 1978 through January 1991. This information can be found in Attachment 5, *Special Publication No. 35, Florida's Geological History and Geological Resources*, The Florida Geological Survey, Division of Resource Management, Department of Environmental Protection,

Physiography

IRP Site No. RW-41 is located within the Western Highlands Physiographic District of the Gulf Coastal Plain Physiographic Province (Northwest Florida Water Management District [NWFWMD], December 1996). The area surrounding the site is characterized by flat to rolling uplands with elevations ranging from 200 to 250 feet above mean sea level (MSL). The uplands are dissected by perennial creeks within relatively steep ravines. The relief between the bottom of the ravines and the surrounding uplands is generally between 50 and 90 feet.

Rocky Creek is located about 700 feet south of the site. A tributary to Rocky Creek is located about 1800 feet west of the site. A small dammed pond is located within the western tributary.

Presently, the site has a sparse vegetative cover of brush and grasses over sandy soils. The area within the gun corridor is cleared and covered with an approximately six-inch clay layer. An asphalt-covered earthen berm bounds the site on the southern edge to inhibit runoff into Rocky Creek. The asphalt covering the berm is cracked in many places. A shallow drainage ditch trending northeast has been constructed to draw storm water away from the eastern part of the RCA.

The site itself exhibits little relief, although the terrain around the site is wooded and slopes steeply to the southeast, south, and southwest toward Rocky Creek and its tributaries. Dominant trees are slash pine and turkey oak with isolated stands of live oak. Palmettos, beach sage, and grasses constitute the underbrush. A moderately well developed erosion gully leading down toward Rocky Creek has developed along a dirt road extending southeast of the site (Figure 2.3).

Hydrogeology

Specific hydrogeologic conditions were estimated from site conditions and regional hydrogeologic maps.

Geologic literature indicates that the surficial aquifer beneath this site extends to an approximate depth of 125 feet bls (Hayes and Barr, 1983). The Pensacola Clay, which acts as an aquiclude and separates the sand and gravel (surficial) aquifer from the underlying Floridan aquifer system, is about 160 feet thick and extends to a depth of approximately 285 feet bls (Maslia and Hayes,

1988). The sand and gravel aquifer occurs under water-table conditions. On the basis of site topography, the groundwater is approximately 50 to 60 feet bls. Groundwater flow directions within the sand and gravel aquifer at the site are anticipated to have a southward component towards the Rocky Creek tributaries.

Two Eglin water supply wells, Well Nos. 37 and 38, are located at the main Test Area C-74 facility, located approximately 0.5 miles northwest of Test Area C-74L. Well Nos. 37 and 38 are associated with Building Nos. 9352 and 9373, respectively. Well No. 37 has been abandoned (Robeen, 1998). Well No. 38 is used only during munitions firing missions and is completed within the Floridan aquifer system at a depth of 644 feet bls. Both the thickness of the Pensacola Clay (160 feet) and the likely direction of groundwater flow at Test Area C-74L (eastward) preclude Well No. 38 from being considered a potential target for contaminant migration from IRP Site No. RW-41. This supply well is located on site just across the asphalt road from Building No. 9372, the site control building. Again, based on the anticipated direction of groundwater flow, this well is located hydraulically up gradient of the RCA. No other water supply wells are known to exist within a one-mile radius of the site (USACE, 1994).

Surface Waters

Rocky Creek and its associated tributaries are classified as Class III bodies of water, designated for use for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife (FDEP, FAC 62-302.400 and 62-302.600).

Because of the relatively low site relief and the site's sandy soils, most storm water run-off at the site would percolate into the subsurface or be subjected to evapotranspiration. During heavy precipitation, some storm water run-off may enter nearby drainage ditches and be transported to the upper tributaries of Rocky Creek.

11. Are there any endangered species in the area?

Eglin AFB is home to the snail darter, indigo snake and the red cockaded woodpecker. All of which are endangered species. Information provided by Eglin Environmental Management office indicates that the stream that runs south of the controlled area at Test Area C-74L contains the snail darter. The stream is approximately 200 feet beyond the controlled area. The land immediately after the controlled area slopes down to the stream. Currently a berm located in the southern back of the controlled area will prevent silt and contaminated soil from being released from the controlled area. Additional silt fencing will be placed at the rear of the controlled area as indicated by washed out areas to prevent silt from leaving the controlled area. Also use of manual remediation of hot spots/areas instead of mechanical removal of the top 6 inches of soil in the controlled area will significantly reduce the chance of silt and soil removal from the controlled area which could effect the habitat of the snail darter.

The indigo snake has been seen in the area of Test Area C-74L but does not live within the radioactive material controlled area, which is being remediated. Remediation activities will not affect the habitat of the indigo snake on Eglin AFB land ranges.

There are no red cockaded woodpecker colonies within Test Area C-74L.

12. Are there any cultural resources that may be impacted?

Information provided by Eglin AFB Environmental Management office indicates there are no cultural resources in the area which may be impacted by the remediation of RW-41 Test Area C-74L.

13. Are there any natural resources in the vicinity of the range?

Information provided by Eglin AFB Environmental Management office indicates there are no natural resources in the vicinity of RW-41 Test Area C-74L which would be affected by the remediation project.

14. From the previous radiation surveys, please identify the ambient exposure rates.

Ambient exposure rates are not available from previous radiation surveys of Test Area C-74L. Current ambient exposure rates are described in the answer to question 16.

15. Please describe how ALARA will be achieved.

The site ALARA program was described in Item Number 11, paragraph 4, provided in the original decommissioning plan submittal.

16. Please demonstrate that doses to the average member of the critical group are ALARA.

The critical group at RW-41 Test Area C-74L is the range worker. The background at Test Area C-74L ranges from 5 to 7 microR/hr depending upon the soil type. Clay having the greatest exposure reading and white sand the lowest exposure reading. Exposure levels around the fence line of the controlled area range from 4 to 8 microR. Exposure levels within the gun corridor range between 3 and 7 microR/hr. Exposure levels within the controlled area range from a low of 5 microR/hr, which covers the majority of the controlled area, to 30 microR which was located on the surface of the dirt pile. The dirt pile contains DU fragments from the gun butt sand. Areas of elevated exposure (8 to 15 microR/hr) are located within the controlled area just south of the gun corridor.

The range workers are normally at the site less than two weeks each month and work mainly within the building and the gun corridor. The range workers do not work in the controlled area.

Using the highest exposure reading, which was found on the dirt pile within the radioactive material controlled area, a duration of 250 workdays per year for 8 hours a day the maximum radiation exposure due to the DU contaminated soil would be 60,000 microR/year or 60 mR/yr. This is below the 100 mR/hr radiation exposure allowed the public. (250 workdays was used for the calculation based on the input parameters for the RESRAD calculation).

30 microR/hr x 250 days/yr x 8 hr/day = 60,000 microR/yr or 60 mR/yr.

The actual exposure should be based on the highest radiation level within the gun corridor, which the range worker will be exposed to. This radiation exposure is 8 microR/hr (1 microR/hr above background). Workers are present on site normal less than 10 days each month, for 8 hours a day. This equates to 120 workdays per yr. Radiation exposure to the workers is 7,680 microR/yr or 7.7 mR/yr, which is the same as the exposure due to background radiation levels at the site.

8 microR/hr x 120 days/yr x 8 hr/day = 7,680 microR/yr or 7.7 mR/yr.

This is approximately 1.0 mR/yr above natural background radiation exposure for a year. The range workers radiation exposure due to DU contaminated soils is considered ALARA.

17. **Included as Attachment 6, is Figure1.3 from the Site Work Plan for your information.**

ML120580623

DEPARTMENT OF THE ARMY
UNITED STATES ARMY YUMA PROVING GROUND
301 C. Street
YUMA, ARIZONA 85365-9428

REPLY TO
ATTENTION OF

February 21, 2012

Director of Safety

Mr. Roberto J. Torres, Senior Health Physicist
Nuclear Materials Licensing Branch
U.S. Nuclear Regulatory Commission Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

Dear Mr. Torres:

As requested in your letter dated January 24, 2012 (mail control number 576010, RE: Yuma Proving Ground Renewal Application of NRC License SMB-1411), we are responding to your request for additional information.

1. Gun Positions 17a and 20 have been the only two gun positions from which material has been test fired under this license. As these are the only two gun positions currently instrumented and equipped for test firing licensed material, we respectfully request the license read Gun Positions 17a AND 20. We will submit a license amendment if the test mission changes such that firing from locations other than GP-17a and GP-20 is required.

2. Yuma Proving Ground has identified four basic operations for its License Decommissioning Plan. These operations are:
   a. Search and recovery of depleted uranium from the licensed impact area downrange of GP-17a and GP-20;
   b. Recovery of approximately 400,000 cubic feet of contaminated soil from the impact area and associated lines-of-fire;
   c. Disposal of recovered depleted uranium and contaminated soil;
   d. Closeout survey of impact area and associated facilities.

   The total cost of decommissioning, with a 25% allowance for contingency and allowing for potential waste volume reduction using MARSSIM, was estimated in 2011 at $228,000,000. This amount will be adjusted for inflation throughout the life of the facility using inflation calculators available from the U.S. Government. Checklists from NUREG-1757, Volume 3, are included as electronic CD-ROM attachments.

3. Natural Uranium and Natural Thorium are useful as calibration standards, and as such we respectfully request they remain on the renewed license.

4. The depleted uranium catchbox located at approximately 3500 meters in front of Gun Position 17a continues to be used, and will be utilized into the foreseeable future. We respectfully request that no decommissioning action be taken against the catchbox.

5. An electronic copy of the NVLAP certification for the U.S. Army Dosimetry Center at Redstone Arsenal is included as a CD-ROM attachment.

6. Although DA PAM 40-18 does not require that individuals using depleted uranium be monitored for external ionizing radiation exposure, Yuma Proving Ground has decided to issue dosimetry for individuals occupationally exposed to depleted uranium as part of their routine job duties.

7. An electronic copy of Technical Bulletin 43-180 is included as a CD-ROM attachment.

8. Air sampling under the renewal license will be conducted using Whatman EPM 2000 or equivalent filter paper, which is 99% efficient for collecting particles with a diameter greater than 0.3 micrometers.

9. Air monitoring is performed at Gun Positions 17a and 20 when depleted uranium munitions are being tested, and the data are presented with our ERM results. Elevated air monitoring results at the Gun Position will be evaluated for occupational uptake potential and personnel bioassay may be ordered as required, in accordance with DA PAM 40-18.

10 a. Electronic copies of DA PAM 40-18 and ANSI N13.30 are included as a CD-ROM attachment.

10 b. Yuma Proving Ground will conduct its bioassay program in accordance with DA PAM 40-18, Chapter 3, Subchapter 6; "Bioassay Requirements and Procedures." An electronic copy of DA PAM 40-18, which is based upon and makes reference to guidance offered in Regulatory Guide 8.11, is included as a CD-ROM attachment.

11. The Chair of the Radiation Safety Committee is Mr. Anthony L. Brockington. The Commander of the U.S. Army Yuma Proving Ground and holder of the license is Colonel Reed F. Young.

12. We respectfully request the correction of this statement in the renewal license.

13. An example of an ongoing study that has also contributed data in support of our ERM is the Depleted Uranium Penetrator Analysis Test Bed Area, or "DU Garden." The protocol for the study conducted in the DU Garden and associated data are included as an electronic folder on the CD-ROM attachment, and we respectfully request this protocol be included as an authorized use under the renewal license.

14. An electronic summary of our ERM program data from FY2008-2010 is included as a CD-ROM attachment. As our ERM data will show, there has been little movement of licensed material from the historic lines-of-fire inside the licensed impact area and no migration outside the licensed area.

15. The values in Table 2 are taken from DA PAM 385-24, The Army Radiation Safety Program. An electronic copy is included as a CD-ROM attachment.

My Point of Contact for Radiation Protection is Mr. Anthony Brockington, Director of Safety and Alternate Radiation Safety Officer. Mr. Brockington may be contacted at (928) 328-2660 or via email at anthony.l.brockington2.civ@mail.mil.

Sincerely,

Reed F. Young
Colonel, U.S. Army
Commanding

Enclosures (CD-ROM)
1. Decommissioning Checklists
2. NVLAP Certification
3. TB 43-180
4. DA PAM 40-18
5. ANSI N13.30
6. YPG ERM Data FY2008-FY2010
7. DA PAM 385-24
8. DU Garden Folder

CF:
ATEC RSSO (Mr. Davis) w/enclosures

ORIGIN ID: YUMA (928) 328-6845
GEORGIA AGUILAR
US ARMY
YUMA PROVING GROUND BLDG 2710

YUMA, AZ 85365
UNITED STATES US

SHIP DATE: 22FEB12
ACTWGT: 0.3 LB
CAD: 0156371/CAFE2511

BILL SENDER

TO **ATTN: MR. ROBERTO TORRES**
US NUCLEAR REGULATORY COMMISSION
NUCLEAR MATERIALS LICENSING BRANCH
1600 EAST LAMAR BLVD
ARLINGTON TX 760114511

REF: 2YYM50

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PRIORITY OVERNIGHT

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TX-US **DFW**

Part # 156148-434 RIT2 07/11

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
US ARMY GARRISON-ROCK ISLAND ARSENAL
1 ROCK ISLAND ARSENAL
ROCK ISLAND, ILLINOIS 61299-5000

ML17004A186

REPLY TO
ATTENTION OF:

Office of the Garrison Commander

DEC 2 1 2016

Document Control Desk
Deputy Director, Division of Decommissioning,
Uranium Recovery and Waste Programs
Office of Nuclear Material Safety and Safeguards
11545 Rockville Pike
Two White Flint North
Rockville, Maryland 20852-2738

Dear Deputy Director:

Reference Amendment No. 18 to US Nuclear Regulatory Commission (NRC) License Number SUB-1435 issued to the Commander, US Army Garrison-Rock Island Arsenal for decommissioning residual depleted uranium at Jefferson Proving Ground (JPG), Madison, Indiana. Your docket number is 40-08838.

I have enclosed a new NRC Form 313, with supporting documents, which requests an amendment to the NRC license to change it from "possession only for decommissioning" to "possession only."

You may contact Dr. Robert Cherry, JPG License Radiation Safety Officer, for additional information at 210-466-0368 or by e-mail at robert.n.cherry.civ@mail.mil.

Sincerely,

Kenneth J. Tauke
Colonel, US Army
Garrison Commander

3 Enclosures:
1. NRC Form 313
2. Requested Changes to NRC License SUB-1435
3. Statement of Intent

NMSS01

NRC FORM 313 (08-2016) 10 CFR 30, 32, 33, 34 35, 36, 37, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 06/30/2019

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the FOIA, Privacy, and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE CURRENT VOLUMES OF THE NUREG-1556 TECHNICAL REPORT SERIES ("CONSOLIDATED GUIDANCE ABOUT MATERIALS LICENSES") FOR DETAILED INSTRUCTIONS FOR COMPLETING THIS FORM: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/. SEND TWO COPIES OF THE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

MATERIALS SAFETY LICENSING BRANCH
DIVISION OF MATERIAL SAFETY, STATE, TRIBAL AND RULEMAKING PROGRAMS
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING,

SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

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 JURISDICTIONS.

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

- ☐ A. NEW LICENSE
- ☑ B. AMENDMENT TO LICENSE NUMBER SUB-1435
- ☐ C. RENEWAL OF LICENSE NUMBER

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

Colonel Kenneth J. Tauke
US Army Garrison-Rock Island Arsenal (IMRI-ZA)
1 Rock Island Arsenal
Rock Island, Illinois 61299-5000

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Jefferson Proving Ground
Madison, Indiana 47250

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Mr. Robert Cherry

BUSINESS TELEPHONE NUMBER	BUSINESS CELLULAR TELEPHONE NUMBER
(210) 466-0368	(210) 313-0952

BUSINESS EMAIL ADDRESS
robert.n.cherry.civ@mail.mil

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 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.

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

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

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

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions*) *(See 10 CFR 170 and Section 170.31)*
*Amendments/Renewals that increase the scope of the existing license to a new or higher fee category will require a fee.

FEE CATEGORY [ ] AMOUNT ENCLOSED $ [ ]

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 , 36, 37, 39, AND 40, AND THAT ALL INFORMATION CONTANED 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.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
Kenneth J. Tauke, Colonel, US Army Commander, US Army Garrison-Rock Island Arsenal	Kenneth Tauke	21 Dec 16

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
APPROVED BY			DATE		

FINAL

LICENSE AMENDMENT REQUEST
JEFFERSON PROVING GROUND, MADISON, INDIANA

MATERIALS LICENSE SUB-1435, DOCKET NO. 40-08838

December 2016

Submitted By:

U.S. ARMY INSTALLATION MANAGEMENT COMMAND
ATTN: IMSO, Building 2261,
2405 Gun Shed Road, Fort Sam Houston, Texas, 78234-1223

Submitted To:

U.S. NUCLEAR REGULATORY COMMISSION
Office of Nuclear Material Safety and Safeguards
11545 Rockville Pike, Two White Flint North, Rockville, MD 20852-2738

Requested Changes to NRC License SUB-1435

The US Army requests the US Nuclear Regulatory Commission (NRC) to make changes to the following license conditions in license number SUB-1435.

Current Text	Requested Text
9. Authorized Use: For possession only for decommissioning. License renewal applications dated August 29, 1994.	Authorized Use: For possession only.
10. Authorized place of use: A. The licensed material shall be kept onsite, for the purpose of decommissioning, in the restricted area known as the "Depleted Uranium Impact Area". This area is located north of the firing line, at the Jefferson Proving Ground, in Madison, Indiana 47250. B. This license has been transferred from the "U.S. Department of the Army, U.S. Army Soldier and Biological Chemical Command, Aberdeen Proving Ground, Maryland 21010-5424" to "U.S. Department of the Army, 1 Rock Island Arsenal, Rock Island, Illinois 61299-5000."	10. Authorized place of use: The licensed material shall be kept onsite in the restricted area known as the "Depleted Uranium Impact Area." This area is located north of the firing line, at Jefferson Proving Ground, Madison, Indiana 47250.
12. D. JPG Security Plan included with the letter dated December 10, 2003.	[Delete. License condition H shows that the current radiation safety plan supersedes the "JPG Security Plan."]
13. The Army shall submit a Decommissioning Plan for NRC review and approval under an alternate schedule identified in its May 25, 2005, Field Sampling Plan; its responses to action items from a September 8, 2005, public meeting by letter dated October 26, 2005; its Field Sampling Plan addendum dated November 2005 and all subsequent addendums; its responses to NRC's request for additional information by letter dated February 9, 2006; and its May 2, 2012 letter. The Army will also submit an Environmental Report using the guidance in NUREG-1748 for NRC to use in preparing an Environmental Impact Statement. The	[Delete. The requested change to license condition 9 obviates the need for this license condition. Also, the Army met this requirement in 2013, although the Army requested the NRC to cease consideration of these submittals while the Army prepared NRC Form 313 and this current request for license amendment.]

Current Text	Requested Text
Decommissioning Plan and Environmental Report will be submitted no later than August 30, 2013.	

The Army also requests that the attached Environmental Radiation Monitoring Plan (ERMP) replace all previous field sampling requirements. The purpose of the previous Field Sampling Plan was for site characterization in anticipation of meeting the decommissioning requirements in the current license. If the NRC agrees to the Army's above request to modify license condition 9, then the purpose of environmental radiation monitoring changes from site characterization to effluent monitoring. The attached ERMP follows the model the NRC has approved [pending] for effluent monitoring of legacy depleted uranium from the M101 spotting round for the M28 Davy Crockett weapon system (license number SUC-1593).

We include a new Decommissioning Funding Plan provided in accordance with 10 CFR 40 § 40.36 that includes a statement of intent to request funds.

Finally, please see the attachment about our request for exemption from the "timeliness rule."

Attachments:
Environmental Radiation Monitoring Plan for the DU Impact Area at JPG
Decommissioning Funding Plan for License SUB-1435 Jefferson Proving Ground
JPG Request for Exemption from the "Timeliness Rule"

Environmental Radiation Monitoring Plan for the DU Impact Area
at Jefferson Proving Ground, Indiana

1. Introduction

The Nuclear Regulatory Commission source material license number SUB-1435 requires environmental radiation monitoring for the DU Impact Area at Jefferson Proving Ground (JPG). The authorized use of the depleted uranium has changed from "possession for decommissioning" to "possession only." As a result, the purpose of environmental radiation monitoring changed from site characterization to effluent monitoring.

The purpose of this environmental radiation monitoring plan (ERMP) is to describe the environmental sampling program to detect depleted uranium (DU) leaving the DU Impact Area. The ERMP explains which environmental pathways require evaluation, which samples will be taken for those evaluations, where these samples will be taken, how often these samples will be taken, and how these samples will be analyzed for DU.

Section 2 describes sampling points and sampling frequencies. Subsequent sections explain why surface water and sediment are sampled while all other media are not sampled.

This ERMP replaces and supersedes "Depleted Uranium Sampling Program, Environmental Radiation Monitoring Program, Jefferson Proving Ground, Madison, IN," dated March 10, 2000 (U.S. Army 2000).

2. Sampling Points and Sampling Frequency (Table 1)

The Army will sample surface water and sediments at locations downstream from the DU Impact Area in Middle Fork Creek (SD-DU-001/SW-DU-001) and Big Creek (SD-DU-002/SW-DU-002) at the JPG installation boundary. Sampling at these points is for detecting any DU that might be leaving JPG.

Similarly, the Army will sample surface water and sediments at locations downstream from the DU Impact Area in Middle Fork Creek (SD-DU-007/SW-DU-007) and Big Creek (SD-DU-008/SW-DU-008) at the boundary of the unexploded ordnance (UXO) area. Sampling at these points is for detecting any DU that might be entering areas at JPG open to the public.

Table 1. Recommended ERM Sample Locations

Sample Location	Sample Media	Sample Frequency
Co-located surface water and sediment samples downstream from the DU Impact Area in Middle Fork Creek (SD-DU-001/SW-DU-001, SD-DU-007/SW-DU-007) and Big Creek (SD-DU-002/SW-DU-002, SD-DU-008/SW-DU-008), as shown in Figure 1 based on the rationale presented in Section 12	Surface water and sediment based on rationale developed from the Environmental Report (U.S. Army 2013a) and site-specific details presented in Sections 8 and 9	Semiannual (spring and fall near hydrologic high and low) unless prevented by weather (e.g., dry stream)

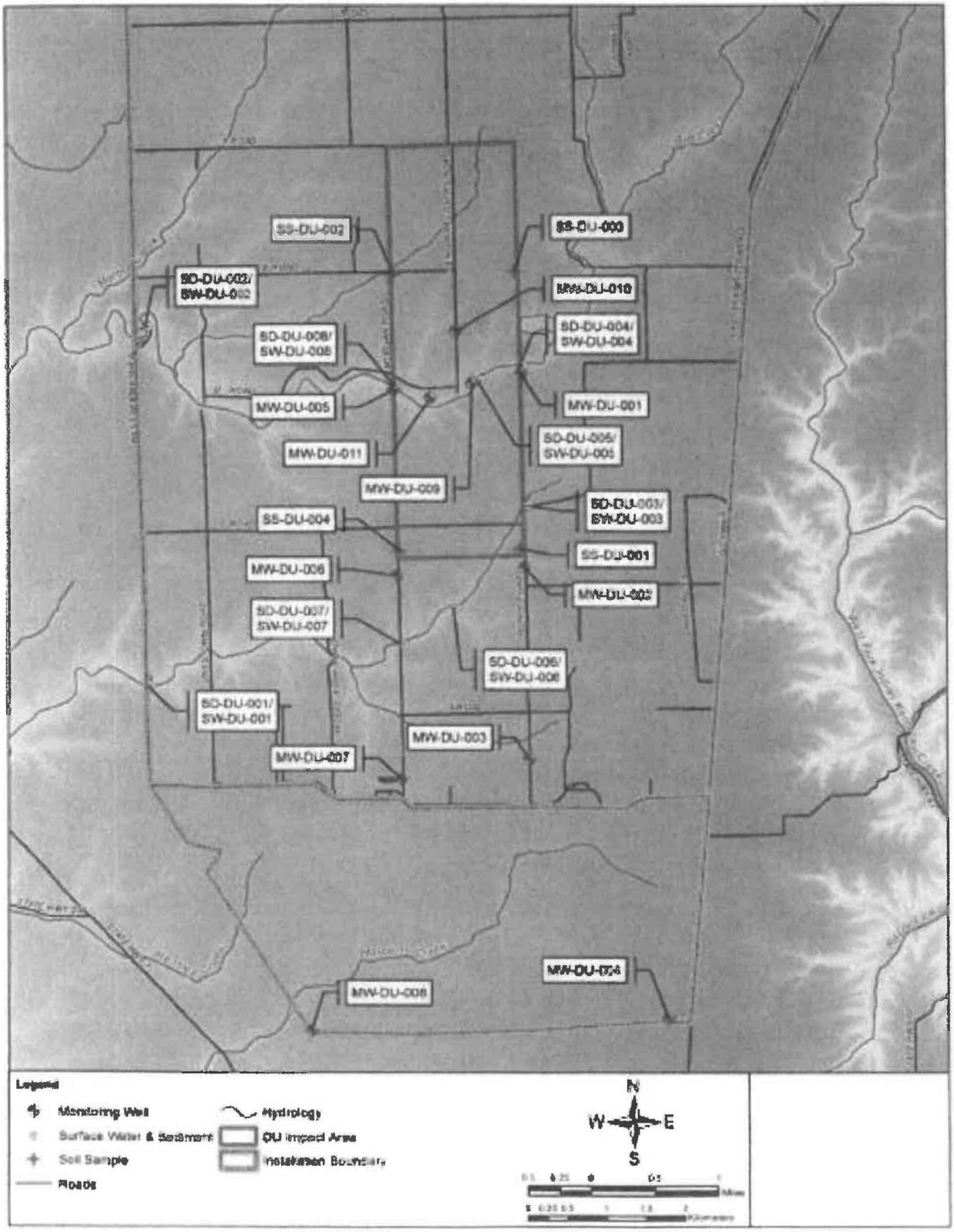

Figure 1 Sampling point locations SW-DU-001, -002, -007, and -008 and SD-DU-001, -002, --007 and -008

3. Historical Information

In addition to the testing of conventional explosive ammunition, the U.S. Army also proof tested large caliber (i.e., 105- and 120-mm) anti-armor DU penetrators under NRC SUB-1435 from 18 March 1984 to 2 May 1994 (U.S. Army 2013). Army personnel fired approximately 220,462 lb (100,000 kg) of DU projectiles into the DU Impact Area. All DU penetrators were test fired from the three fixed-gun positions on the east-west oriented firing line using guns that were aimed in a northerly direction. Since the penetrators were not fired at hard targets (e.g., dismantled tanks, armored personnel carriers), the penetrators traveled through the soft targets, hit the earth/buried itself, or ricocheted/continued traveling until each penetrator lost all kinetic energy and fell to the ground.

Under the former site characterization monitoring program (U.S. Army 2000) samples were collected semiannually in the fall and spring from 23 locations (Figure 1). Samples from different media were collected, including 4 surface soil, 11 groundwater, 8 surface water, and 8 sediment samples (U.S. Army 2000), plus one duplicate sample for each medium during each event.

4. Physical Environment

The DU Impact Area is within the Muscatatuck Plateau physiographic region and is characterized by broad uplands covered by glacial till with entrenched valleys (Gray 2001). The glacial deposits overlie Paleozoic bedrock consisting of interbedded limestone, dolomite, and shale, and overburden thicknesses based on previously installed monitoring wells range from 10 to greater than 65 ft thick (U.S. Army 2002). According to Franzmeier, Steinhardt, and Schulze (2004), the glacial till is Pre-Wisconsinan age and thought to be Illinoian age or older and is covered with a thick (>6 ft thick) mantle of Wisconsinan age loess (wind deposited silt). The soil region that encompasses the DU Impact Area is described as "moderately thick loess over weathered loamy glacial till" (USDA NRCS 1999).

The DU Impact Area is incised by two streams (i.e., Middle Fork Creek and Big Creek) and associated tributaries. The surface relief generally is a result of erosion and down cutting associated with the streams and surface water flow to the streams. The surface water drainage is characterized as exhibiting a dendritic pattern that discharges to the streams. The vegetative cover consists of wooded areas containing deciduous trees and open spaces populated with grasses, sedges, and other herbaceous plants. FWS uses controlled burns (management of vegetation by prescribed fires) to manage some of the grassland areas. A wide variety of wildlife inhabits the area, including terrestrial crayfish and other burrowing animals that may cause localized bio-turbation (i.e., reworking of soils and sediments by animals or plants) of the soil.

MC08260063 8

DEPARTMENT OF THE ARMY
US ARMY ABERDEEN TEST CENTER
400 COLLERAN ROAD
ABERDEEN PROVING GROUND, MARYLAND 21005-5059

REPLY TO
ATTENTION OF
TEDT-AT-CO

27 AUG 2008

Br 2

MEMORANDUM THRU

27 Aug 2008

Mr. James B. Johnson, Executive Director, US Army Developmental Test Command, 314 Longs Corner Road, Aberdeen Proving Ground, MD 21005-5055
MG Roger A. Nadeau, Commander, US Army Test and Evaluation Command, 4501 Ford Avenue, Alexandria, VA 22303-0001

FOR US Nuclear Regulatory Commission, Licensing Assistant Team, Division of Nuclear Materials Safety, Region I, 475 Allendale Road, King of Prussia, PA 19406-1415

SUBJECT: Renewal of Source Material License SUB-834, Docket No. 040-07354, Control No. 142314

1. References:

a. Letter, NRC Region I, 27 February 2008, subject: Department of the Army, Request for Additional Information Concerning Financial Assurance Documents, Control No. 141654.

b. Memorandum, ATC, TEDT-AT-CO, 14 July 2008, subject: Response to Amendment of NRC Source Material License No. SUB-834, Control No. 142314.

c. Letter, HQ NRC, Division of Industrial and Medical Nuclear Safety, 24 June 2008, subject: Notice of Expiration.

d. Telephone conversation between Mr. Dennis Lawyer, NRC Region I, and Mr. J. Scott Wright, Chairman, ATC Radiation Safety Committee, 20 August 2008, subject: Request for Additional Information Concerning Financial Assurance Documents.

2. Request renewal of subject license. The changes and additional information provided in our financial assurance documents requested in ref 1d are at enclosures 1 and 2. The NRC Form 313, Application for Materials License, and the supporting documentation describing our current program is at enclosure 3.

3. Please note that our decommissioning and financial assurance documentation was patterned after NUREG-1757, Appendix A and uses the assumptions contained within including that source limits are reached and decommissioning activities will commence immediately upon cessation of operations. This cost estimate does not include any salvage value from the material removed or cost benefits not available to the general public. This

142756
NMSS/RGN1 MATERIALS-002

cost estimate will be adjusted when license amendments are approved or every three years for inflation.

4. My point of contact for this matter is Dr. Tanya Palmateer Oxenberg, (410)278-1309, tanya.oxenberg@us.army.mil.

3 Enclosures

JOHN P. ROONEY
Colonel, FA
Commanding

CF:
Cdr, USACHPPM, 5158 Blackhawk Road, APG, MD 21010-5403

NRC FORM 313 (4-2008)
10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 **EXPIRES: 10/31/2008**

Estimated burden per response to comply with this mandatory collection request: 4.4 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
612 E. LAMAR BOULEVARD, SUITE 400
ARLINGTON, TX 76011-4125

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 JURISDICTIONS.

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

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER
- [x] C. RENEWAL OF LICENSE NUMBER **SUB-834**

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

US ARMY ABERDEEN TEST CENTER
400 COLLERAN ROAD
ABERDEEN PROVING GROUND, MARYLAND
21005-5059

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

US ARMY ABERDEEN TEST CENTER
400 COLLERAN ROAD
ABERDEEN PROVING GROUND, MARYLAND
21005-5059

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Tanya Palmateer Oxenberg, Ph.D.

TELEPHONE NUMBER

(410) 278-1309

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 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. See Tab A

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED. See Tab B

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE. See Tab C

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS. See Tab D

9. FACILITIES AND EQUIPMENT. See Tab E

10. RADIATION SAFETY PROGRAM. See Tab F

11. WASTE MANAGEMENT. See Tab G

12. LICENSE FEES *(See 10 CFR 170 and Section 170.31)*

FEE CATEGORY	AMOUNT ENCLOSED $

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, 36, 39, 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.

CERTIFYING OFFICER – TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
John P. Rooney, Colonel, FA, Commander, ATC	John P. Rooney	27 Aug 08

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		
APPROVED BY				DATE	

Enclosure 3

Item 5:

	Byproduct, source, and/or special nuclear material	Chemical and/or physical form	Maximum amount that licensee may possess at any one time under this license
A	Uranium (natural)	Any	5 kilograms
B	Uranium (depleted)	Metal Alloy	500 kilograms
C	Thorium	Any	5 kilograms

Item 6:

For use in munitions, projectiles, and other components; as armor and shielding material; as simulator of special nuclear devices; and in testing of various components including the routine test firing of ammunition into an enclosed facility (e.g. Superbox) against conventional armor and/or armor incorporating depleted uranium (DU), at the Ford's Farm test range. Test firing of DU ammunition for accuracy against "soft targets" are conducted at the Main Front Barricades and Trench Warfare test ranges into catchboxes to facilitate DU recovery and minimize the increased amount of DU unrecovered in the impact area.

Test firings will not be intentionally fired into streams, rivers, or the Chesapeake Bay that is outside the DU impact area.

For processes which may be used in the disassembly of targets, structures, or vehicles, such as tanks, that contain or are contaminated with DU. These processes include, but are not limited to grinding, cutting, sawing, chiseling, torching, shearing, and the use of explosive devices. Processes will be conducted inside an enclosed facility at the Ford's Farm test range such that airborne particles will be contained within the facility and not released to the unrestricted area.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

A8479
Check license status

June 23, 1999

Major Kristin Swenson
Department of the Air Force
USAF Radioisotope Committee
HQ AFMOA/SG02
110 Luke Ave, Suite 400
Bolling AFB, DC 20322-7050

SUBJECT: NRC INSPECTION 030-28641/99-01

Dear Major Swenson:

This refers to the inspection conducted on May 27, 1999, at Nellis Air Force Base, Nevada. The inspection was limited to a review of activities authorized under Permit No. NV-10122-02/00AFP for chemical agent alarms; and Permit No. NV-30048-01/00AFP for depleted uranium projectiles.

Within the program areas reviewed during this inspection, no violations of NRC requirements were identified; therefore, no response to this letter is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter will be placed in the NRC Public Document Room (PDR).

Should you have any questions concerning this inspection, please contact Mr. David D. Skov at (925) 372-7769 or Mr. Anthony Gaines at (817) 860-8252.

Sincerely,

Charles L. Cain, Chief
Nuclear Materials Licensing Branch

Docket No. 030-28641
License No. 43-23539-01AF

cc: Nevada Radiation Control Program Director

Should this be 42?
Probably typo.

9907010297 990623
PDR ADOCK 03028641
C PDR

DEPARTMENT OF THE ARMY
U.S. ARMY COMBAT SYSTEMS TEST ACTIVITY
ABERDEEN PROVING GROUND, MARYLAND [illegible]

51705
7/16/19

REPLY TO
ATTENTION OF

STECS-SO-[illegible] (385-11[illegible])

[illegible] August 198[illegible]

MEMORANDUM THRU

Commander, U.S. Army Test and Evaluation Command, ATTN: AMSTE-ST-S, Aberdeen Proving Ground, MD 21005-5055

Commander, U.S. Army Materiel Command, ATTN: AMCSF-P, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001

FOR U. S. Nuclear Regulatory Commission, Region I, ATTN: Mr. John D. Kinneman, Nuclear Materials Safety Section B, Division of Radiation Safety and Safeguards, 475 Allendale Road, King of Prussia, PA 19406

SUBJECT: NRC License SUB-[illegible]

OK

1. Reference meetings of NRC and USACSTA personnel on [illegible], 28 June, and 10 July 1989.

2. This letter is to inform the Nuclear Regulatory Commission, as agreed at referenced meetings, that USACSTA is planning to construct a depleted uranium sand trap (DUST). (This project may also be referred to as DU soft target "catch box"). A Record of Environmental Consideration (encl 1), a drawing (encl 2), a location map for the DUST project (encl 3), and a memo, subject: Wetland Consideration for Proposed DU Catch Box Sites (encl 4) are enclosed. The purpose of this project is to collect (in a relatively small sand bunker) DU projectiles which have been fired at soft targets and, thus, decrease the area of environmental concern for future soft-target DU testing.

3. The DUST structure is expected to be ready for testing by 1 October 1989, and will conform to the conditions currently in effect regarding soft-target testing of DU munitions, as stated in subject license. The environmental document for the DUST facility will be incorporated in the environmental assessment of all USACSTA DU operations, included in the application for renewal of subject license and submitted for NRC approval [illegible].

[illegible]

NRC Form 374
(5-84)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 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		
[illegible]	3. License number	SUB-[illegible]
9[illegible] Olive Blvd. St. Louis, MO 63132	4. Expiration date	November 30, 198[illegible]
	5. Docket or Reference No.	040-[illegible]
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. Depleted Uranium	A. Metal Alloy	A. 2,000 kilograms

9. Authorized Use ✓ STORAGE, not firing range related.

A. For use in projectile core assembly, storage and distribution to persons authorized to receive the licensed material pursuant to the terms and conditions of specific licenses issued by the Nuclear Regulatory Commission or an Agreement State.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at 9[illegible] Olive Blvd., St. Louis, Missouri.

11. Licensed material shall be used by, or under the supervision of, Richard [illegible] Luther or Lyle D. Windsor.

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

13. The licensee shall not conduct destructive tests involving source material such that airborne radioactivity would be released to restricted or unrestricted areas as defined in Section 20.3(a)(14), 10 CFR Part 20.

14. The licensee shall conduct a physical inventory every 6 months to account for all source material received and possessed under the license. Records of inventories shall be maintained for 2 years from the date of each inventory.

NRC Form 374

4/644

U.S. NUCLEAR REGULATORY COMMISSION

PAGE 1

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954 as amended, the Energy Reorganization Act of 1974 (Public Law 9[illegible] Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements [illegible] heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess and [illegible] source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) [illegible] deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the [illegible] license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 19[illegible] subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter [illegible] conditions specified below.

Licensee

1. Valentec Product Development Center

2. 315 Richard Mine Road
Wharton, New Jersey 07885

3. License number SUB-1502

4. Expiration date March 31, 1992

5. Docket or Reference No. 040-08937

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Uranium (Depleted)	A. Solid Metal	A. 5,000 Kilogram[illegible]

9. Authorized use

A. For use in assembly of armor piercing projectiles.

CONDITIONS

10. Licensed material shall be used only at 315 Richard Mine Road, Wharton, New [illegible]

11. Licensed material shall be used by, or under the supervision of, George A. [illegible] Sunit K. Ohri, or individuals designated by the licensee who have completed [illegible] training course described in application dated January 17, 1987.

12. 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 January 17, 1987
B. Letter dated March 3, 1987

For the U.S. Nuclear Regulatory Commission

Date ____________

By ____________
Nuclear Materials Safety and Safeguards Branch, Region I
King of Prussia, Pennsylvania 19[illegible]

8703130035 870317
REG1 LIC40
SUB-1502 PDR

OFFICIAL RECORD COPY

NRC Form 374A (9-82) U.S. NUCLEAR REGULATORY COMMISSION

45232

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number	SUB-1440
Docket or Reference number	040-08850
Amendment No	04

Hercules Incorporated
Allegany Ballistics Laboratory
P. O. Box 210
Rocket Center, West Virginia 26726

In accordance with letter dated July 15, 1987, License Number SUB-1440 is amended as follows.

Items 6, 7, 8, and 9 are amended to read:

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. Depleted Uranium	A. Metal (Cadmium Plated)	A. 160 Kilograms
B. Depleted Uranium	B. Finished metal Parts	B. 1600 Kilograms

9. Authorized use

A. For use as shielding in X-ray equipment

B. For use in the assembly of projectiles.

Condition 13. is amended to read as follows:

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 February 1, 1984

B. Letter dated February 26, 1986 and attachments thereto

C. Letter dated

- April 6, 1987
- July 15, 1987

FOR THE U. S. NUCLEAR REGULATORY COMMISSION

Date SEP 18 1987

By CAROL A. CONNELL

Region II, Nuclear Materials
Safety Section
101 Marietta Street, Suite 2900
Atlanta, GA 30323

R. [illegible]

45232

Background/Program Description

During 1986-87, Hercules/ABL conducted a design and feasibility demonstration program of a projectile containing a DU component. In support of this program Hercules/ABL obtained NRC license authorization to handle solid DU components. A radiation controlled area was established and operated in accordance with NRC requirements.

Hercules/ABL has now been selected by U.S. Army, Armament Research Development & Engineering Command (ARDEC) [illegible] NJ) for the full scale Engineering Development (FSED) of a 105mm projectile and also the feasibility demonstration of a 120mm projectile. The DU [illegible] required for this effort will be machined to the required dimensions by a subcontractor at a facility that has been approved by the NRC for such a machining operation. Consequently, Hercules personnel will only handle the DU in final configuration; no machining (grinding, sanding, etc.) of the DU will be performed at the Hercules facility.

Hercules/ABL will continue to handle DU in the same manner as we are currently doing, which was described in reference 5. However to meet scheduled rates we will need to bring up to 3520 lbs. (1600 kg) of DU components on plant at any given time. During the last part of FSED and production programs to follow, the DU component will be installed in the projectile assembly by subcontractors.

Additional radiation workers are being trained in accordance with Title 10, Chapter 1 CFR, Part 19 to support the increased work load required for this follow on effort.

Amendment Request

Hercules Incorporated requests an amendment to Nuclear Regulatory Commission Materials License No. SUB-1440 to allow Hercules Incorporated at Allegany Ballistics Laboratory to possess a total of 1760 kilograms of depleted uranium at any one time. The DU will consist of 160 kilograms of metal (cadmium plated) used for shielding in X-ray equipment and 1600 kilograms of bare metal alloy (99+% DU) components which will be received, stored, handled, and shipped in performing assembly operations for a projectile.

A license amendment fee of $120.00 is enclosed for this requested amendment. This fee was specified during a conversation with Glenda Jackson of the NRC on 7/9/87.

If you have any questions concerning this request, please contact Mr. Dave McAfee at 304-726-5304 or Mr. Clyde Hitt at 304-726-5353.

Very truly yours,

G. H. Moody
Vice President and Resident Manager

CWH:[illegible]/jw(10461)

Enclosure

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, ARMAMENT SYSTEMS DEPARTMENT
LAKESIDE AVE., BURLINGTON, VT. 05402 .. PHONE (802) 658-1500

AIRCRAFT
EQUIPMENT
DIVISION

April 12, 1978

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Earl Wright
Radio Isotopes Licensing Branch

Subject: Request for Amendment to Source Material
License No. SUB-983-(Docket 40-8003)

Gentlemen:

The U.S. Air Force has requested the Armament Systems Department of the General Electric Company to conduct a special test involving the firing of 8,000-10,000 roundsof 30MM ammunition with depleted uranium penetrators. Purpose of the test is to acquire additional compatibility data for the ammunition and the GAU-8 gun and obtain additional ballistic data. The quantity of ammunition required for this test will exceed the 2,000 pound maximum currently specified in Amendment No. 02 to the subject source Material License by a substantial margin. Therefore, it is requested that the subject license be further amended to increase the maximum quantity to be possessed at any one time from 2,000 pounds to 10,000 pounds.

The aforementioned special test will be conducted at the Underhill Firing Range, a U.S. Government-owned facility used by the Armament Systems Department under the Terms of Facility Contract No. DAA09-74-C-2065. The test will be carried out over a 6-8 week period starting about May 1, 1978 or as soon thereafter as the Source Material License Amendment requested herein, is received. Test ammunition will be shipped to the Underhill test site as soon as this request for increased quantity is approved. Adequate storage capacity for the test ammunition is available at the Underhill Firing Range.

The Air Force has expressed a sense of urgency in initiating the test program as soon as possible, so expeditious processing of this request for license amendment is solicited. The cognizant Air Force officials responsible for expediting these tests are Major Richard Hackford and Captain Lon Eately of the A-10 Systems Program Office, Aeronautical Systems Division, Wright Patterson Air Force Base, Ohio. The telephone number for their office is 513-255-3639.

Under this special test, all depleted uranium projectiles will be fired into an enclosed sand trap. There will be no firing against hard targets. All safety and disposal procedures described in Amendment No. 02 to the subject license will be followed in conducting this special test. Since there will be no firing against hard targets, the risk of atmospheric contamination is minimal.

8708

PDR
Return To
D. Cramer
396-55

Flinchbaugh Products
A Division of General Defense Corporation

RECEIVED

1981 DEC 17 AM 10 53

December 15, 1981

U.S. NUCLEAR REG. COMMISSION
RMSS MAIL SECTION

U.S Nuclear Regulatory Commission
Office of Nuclear Material Safety and Standards
Division of Fuel Cycle and Material Safety
Radioisotope Licensing Branch
Washington D C 20555

RECEIVED
DEC 23 1981

Gentlemen

Enclosed please find an original plus three (3) copies of Form NRC-2 requesting an amendment to our source material license SUB-1243 authorizing the possession and use of 8,000 kilograms of depleted uranium alloy. Since the source material activity to be conducted is classified as Category 2-D in the licensing fee schedule, a check for $40.00 is also enclosed.

Not firing range related.

Very truly yours,

FLINCHBAUGH PRODUCTS, INC.
Product Development Divison
A Subsidiary of Clabir Corp

Victor Quadagno
Vice President of Product Development

VQ:djw

8201190362 811215
PDR ADOCK 04008708
C PDR

20052

Mailing Address: 318 Richard Mine Road • Wharton, New Jersey 07885 • (201) 361-3940

ATTACHMENT TO NRC-2 (20 September 1978)

ITEM 9 "Amended"

General Description, Receipt to Disposal

Machined cores of armor-piercing projectiles weighing approximately 8 pounds each, will be received from our supplier in quantities up to 6,000 kilograms (85 cores) per shipment. Pending assembly, they will be stored in a vault in the D.U. Room (See Exhibit A). Assembly of the cores with other components of the projectile will be accomplished in accordance with the procedures shown as Exhibit B to this attachment. During assembly and awaiting shipment the source material will be confined within the D.U. Room. The end-product will be packaged and shipped in accordance with 10 CFR 71 and will be picked up by Flinchbaugh personnel. Also, approximately once a month shipments of about 90 cores will be delivered by Flinchbaugh personnel to Aberdeen Proving Ground, Maryland.

Hazard Evaluation

To the public: Under credible circumstances the only hazards to the public that could occur from this operation would result from fire and careless disposal of low activity waste. Since uranium is pyrophoric, at high temperatures (>2,000° F) uranium oxide could become airborne in the event of a fire in or near the D.U. Room. The entire building, including the Flinchbaugh section, is protected by an overhead sprinkler system. As shown in Exhibit A, four sprinklers are located in the D.U. Room. Instructions will be issued to the company staff and to the chief of the Rockaway Township Fire Company that in the event of a major fire involving the D.U. Room, firefighters will wear MSA Pressure Demand Air Masks, Model 401 a full facepiece, self-contained device which has NIOSH approval TC-13F-30, or equivalent. Two of these devices will be stored at the plant entrance for use in an emergency.

PDR
Return
376 SS

9/30/82
2D Re

Flinchbaugh Products
A Division of General Defense Corporation

July 21, 1982

U. S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Division of Fuel Cycle and Material Safety
Radioisotopes Licensing Branch
Washington, DC 20555

Gentlemen:

Enclosed is an original plus three copies of form NRC-2 requesting renewal of our source material license SUB-1318, authorizing the possession and use of 103,000 kilograms of depleted uranium. Since the source material activity to be conducted is classified in the licensing fee schedule, a check for $70 is also enclosed.

The information on form NRC-2 has been updated in its entirety from our amendment of February 27, 1981. Please note the following requested changes to our license:

1. The maximum amount of material at any one time is increased to 115,000 kilograms from 103,000.

2. The addition of the manufacture of the XM833 and XM829 projectiles.

3. Included as Exhibit A is an updated drawing of the assembly area, as constructed for the assembly of the M735, M774, XM833 and XM829 projectiles. You will find that no substantive changes have been made.

8/2/82
AUG PG 1 Renewal
Brown
8/3/82

Very truly yours,

General Defense Corporation
Flinchbaugh Division

Donald Bailey

Donald Bailey
Executive Vice President

DB/pf

Enclosures

26653
8/30/82
Renewal
8/2/82
Brown

Mailing Address P.O. Box ... Red Lion, Pennsylvania 17356 ... (717) ...-4551

21054

October 20, 1981

MEMORANDUM FOR: Richard E. Cunningham, Director
Division of Fuel Cycle and Material Safety
Office of Nuclear Material Safety and Safeguards

FROM: Guy H. Cunningham III
Director and Chief Counsel
Regulations Division
Office of the Executive Legal Director

SUBJECT: NRC JURISDICTION OVER DEPLETED URANIUM MUNITIONS

Jurisdiction letter

In your memorandum of October [illegible], 1981, you requested my opinion on the licensing under the Atomic Energy Act of 1954, as amended, of the use of depleted uranium in munitions used by the Armed Forces.

Section 62 of the Atomic Energy Act (AEA) generally requires a person to be authorized by license to possess and use source material. Depleted uranium is source material, and the Department of Defense and the Army, Navy, and Air Force are persons under the AEA (see Sections 11 . and 11s. of the AEA). Accordingly, the Armed Forces need to be licensed to possess and use depleted uranium in munitions (specifically as a projectile) unless such possession and use is exempted from licensing either by statute or regulation.

The exclusions from licensing in the AEA applicable to Department of Defense activities do not appear to cover the use of depleted uranium in projectiles. For example, Section 110 of the AEA excludes from licensing Department of Defense utilization facilities authorized under Section 91. Under Section 91b, the President may authorize the Department of Defense to acquire utilization facilities, and may direct the "Commission" (now the Department of Energy) to deliver atomic weapons to the Department of Defense. The nuclear materials in such weapons are not subject to NRC licensing. "Atomic weapon," however, is restrictively defined in Section 11d. of the AEA as a device utilizing atomic energy, which in turn is defined in Section 11c. of the AEA as energy released in the course of nuclear fission or nuclear transformation. Under these definitions, depleted uranium projectiles are not atomic weapons, and thus do not fall into any of the statutory exceptions to licensing.

Neither do the Commission's regulations in 10 CFR Part 40 provide an exemption from licensing for the depleted uranium projectiles. The exemption provisions of 10 CFR 40.11 apply only to the Department of Energy or its prime contractors under limited circumstances, none of which apply to the present case.

8112040357 811020
CF SUBJ
CF

R. E. Cunningham

Accordingly, my conclusion and opinion is that the depleted uranium projectiles possessed and used by the Armed Forces are subject to NRC licensing jurisdiction.

Guy H. Cunningham III
Director and Chief Counsel
Regulations Division
Office of the Executive
Legal Director

cc: [illegible] Miller
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] Fonner

Distribution
GHCunningham
RLFonner
OELD R/F
OELD S/F
Regs R/F
Central File

OELD RLFonner:js GHCunningham 10/ /81						

PDR
Return

DEPARTMENT OF THE ARMY T. Grucci/seb/AUTOVON 28
HEADQUARTERS US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA. 22333

Dave C
396

DRCSF-P/81-0045

8 May 1981

Director
Nuclear Material Safety and Safeguards
ATTN: Radioisotopes Licensing Branch
US Nuclear Regulatory Commission
Washington, DC 20555

Gentlemen:

Recommend approval of US Army Aberdeen Proving Ground application for amendment of Source Material License Number SUB-834 (Incl 1). This request is to authorize destructive testing of a minimum of 10 and up to 25 depleted uranium projectiles by firing into a target butt enclosure for the purpose of determining enclosure integrity.

Request expeditious handling of the request as target enclosure completion is expected to be 1 June 1981.

Please acknowledge receipt of correspondence on inclosed DA Form 209 Mail Reply Card (Incl 2).

Sincerely,

2 Incl
as stated

DARWIN N. TARAS
Chief, Health Physics
Safety Office

Copies Furnished:
HQDA (DASG-PSP-E) WASH DC 20310 (ltr to NRC only)
Dir, DARCOM PSA, Charlestown, IN 47111 (ltr to NRC & applic)
Cdr, US Army Test and Evaluation Command, ATTN: DRSTE-ST, Aberdeen Proving Ground MD 21005 (ltr to NRC only)

FEE EXEMPT 19096

DEPARTMENT OF THE ARMY
U S ARMY ABERDEEN PROVING GROUND
ABERDEEN PROVING GROUND, MARYLAND 21005

STEAP-SA

18 MAR 1981

SUBJECT: Application for Amendment to Source Material License SUB 834

THRU Commander
US Army [illegible] and [illegible] Command
ATTN: [illegible]
Aberdeen Proving Ground, Maryland 21005

THRU Commander
US Army Materiel Development and Readiness Command
ATTN: DRCSF-P
5001 Eisenhower Avenue
Alexandria, Virginia 22333

TO Director
Nuclear Material Safety and Safeguards
US Nuclear Regulatory Commission
Washington, DC 20555

1. Request that Source Material License SUB 834 be amended to authorize destructive testing of a minimum of 10 and up to 25 depleted uranium (staballoy) projectiles by firing into a target butt enclosure for the purpose of determining enclosure integrity.

2. The destructive testing of a minimum of 10 rounds and a maximum of 25 rounds will be used to obtain data on containment of aerosolized material.

3. The data and analysis results will be furnished to the Nuclear Regulatory Commission upon completion of testing and analysis in an amendment requesting authorization for continuation of T&E and QA firing similar to that furnished in Aberdeen Proving Ground letter application dated 12 May 1980 which resulted in issuance of SUB 834 Amendment 08.

[illegible]

8106180 647

STEAP-SA 16 MAR '98

SUBJECT: Application for Amendment to Source Material License SUB 834

4. This enclosure will be erected at the BTD Range (200-meter range) at Aberdeen Proving Ground. The enclosure drawing is inclosed at Inclosure 2. Testing protocols are at Inclosure 1. Record of Determination is at Inclosure 3. Completion date of the target enclosure is expected to be 1 June 1981. The Aberdeen Proving Ground Radiation Protection Committee approved the subject application for amendment in its 4 March 1981 meeting. Expeditious processing is requested.

William E. Watts

3 Incl
as

WILLIAM E. WATTS
Colonel, OrdC
Commanding

Protocol for 200 Meter (BTD) Environmentally Controlled Enclosed Depleted Uranium Firing Facility

1 Description of Enclosed Target Facility

1.1 Structure - The environmentally controlled facility consists of an enclosure 24 feet wide by 24 feet high by 50 feet long. It is equipped with an air evacuation/filtration system. The enclosure is of structural steel construction. The rearmost areas (in the vicinity of the target) are reinforce with additional steel plates for protection from fragments. Provision is made for removable roof panels, sliding door (side opening) for target access, and back stop plates. Provision is made for decontamination (wash down) of the interior with floor drainage to a holding/evaporation tank.

1.2 Air Evacuation/Filtration System - The system consists of prefilters a high efficiency particulate arrestor (HEPA) filters with associated housings, manometers, air handling unit, and ductwork. Face area of the filter bank is designed so as not to exceed the manufacturers recommended maximum face velocit when operated at the designed flow rate of 18000 cubic feet per minute.

a. Prefilters, Stages 1 and 2 - The prefilter section consists of two arrays (banks) within a steel housing. The first stage consists of 18 each 2-inch minimum thickness 2 foot by 2 foot pleated fire retardant filters. The second stage consists of a bank of 18 each high efficiency (90% average NBS dus spot efficiency) dry cell fire retardant filters. Both stages are loaded from the same access area.

b. High Efficiency Particulate Arrestor (HEPA) Filters - The HEPA filter bank consists of 18 fire retardant filters of not less than 99.97% efficiency at 0.3 Micron size particle. This is a front loading system.

c. Manometers - Inclined type manometers are installed across each filter bank. A vertical manometer is installed across the system. All manometers are equipped with over pressure safety traps and valves for checkin zero setting.

d. Air Handling Unit - The unit is a Buffalo Forge size 210 BLD high pres double inlet drawn-thru system equipped with radial-type variable inlet vanes automatic air volume control. The unit is driven with an internal mounted 40 horse power electric motor.

e. Ductwork - All ductwork is of welded steel plate and sheet metal construction with suitablely located access doors for filter maintenance.

2. Test Plan for Qualifying the Enclosure

2.1 Objective - To determine the functional adequacy and strength of desi of an enclosure for containing and restricting emission of radioact e particu lates to the environment when testing ammunition with depleted uranium (staballoy) penetrators against armor targets.

2.2 Scope - The qualification test will require approximately 25 days to complete and will be conducted by the Materiel Testing Directorate at US Army Aberdeen Proving Ground. The individual subtests are designed to generate data on the strength of design of the enclosure, filter integrity and performance of the air evacuation/filtration system.

2.3.1 In Place Leak Tests - These tests will be performed prior to use of the facility. The tests will conform to American National Standards Institute standards as listed in ANSI N509 - 1976 and ANSI N510 - 1975 as implemented by NRC Regulatory Guide 1.140 - March 1978.

2.3.2 Strength of Design/Filter Integrity Test - Sufficient static charges will be detonated and/or tungsten penetrators fired against armor targets to determine strength of design of the enclosure and filter integrity.

a. Prior to testing and after completion of these tests visual inspection and in-place dioctyl phthalate (DOP) leak tests will be conducted. DOP tests during the test may be conducted as deemed warrented.

b. Visual inspection and photographic coverage will be utilized to check for noticeable leakage, holes, breaks, or other damage to the facility.

c. Pressure transducers will be used at various locations within the enclosure to determine overpressures and severity of the test. The pressures before and after each filter bank will be recorded and used for filter integrity confirmation.

2.3.3 Integrity of Air Evacuation/Filtration System - A minimum of 10 and maximum of 25 depleted uranium penetrators will be fired against armor targets to determine adequacy of the air evacuation/filtration system.

a. Visual tests will be performed to check for noticeable leaks, holes, or other damage to the filters and will be accomplished in conjunction with air sampling after each round is fired.

b. Surveillance of the enclosure and filtering system (para 2 3c) will be performed throughout the test phase.

c. Air sampling will be performed at the exhaust of the air evacuation/ filtration system with in-line air particulate monitoring instrumentation. This sampling will be performed continuously whenever the system is in operation.

ABERDEEN PROVING GROUND

RECORD OF DETERMINATION

OF

ENVIRONMENTAL CONSIDERATIONS

FOR

RESEARCH, DEVELOPMENT, TEST AND EVALUATION ACTIVITIES

The proposal to fabricate a depleted uranium (DU) test target enclosure at the 200 Meter Range, BTD, APG and to operate this range throughout a long term test and evaluation program for testing of kinetic energy DU penetrator munitions against targets within the enclosure at various ranges up to 200 meters.

(A) is exempt from NEPA requirements under the provisions of the Federal law entitled _____.

OR (B) is adequately covered in the existing environmental document entitled Testing of Depleted Uranium Penetrator Munitions, APG, dated 4 June 1980.

OR (C) has been evaluated for its potential environmental impacts (copy attached). There are/are not circumstances which make an EA/EIS necessary. This proposal does/does not qualify for Categorical Exclusion #_____ contained in _____.

Project Officer Howard Yaden FA Date 7 Jan 81

Activity Environmental Quality Coordinator M. J. Drake Date 7 Jan 81

APG Environmental Quality Coordinator [signature]

Date Approved 20 81

19385

DR
Return to
Dave Orr
396 ss

DEPARTMENT OF THE ARMY
HEADQUARTERS US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA. 22333

DRCSF-P/81-0045

6 May 1981

40-07734

Director
Nuclear Material Safety and Safeguards
ATTN: Radioisotopes Licensing Branch
US Nuclear Regulatory Commission
Washington, DC 20555

Gentlemen:

Recommend approval of US Army Aberdeen Proving Ground application for amendment of Source Material License Number STB-33. (Incl 1). This request is to authorize destructive testing of a minimum of 10 and up to 15 depleted uranium projectiles by firing into a target butt enclosure for the purpose of determining enclosure integrity.

Request expeditious handling of the request as target enclosure completion is expected to be 1 June 1981.

Please acknowledge receipt of correspondence on enclosed DA Form 209 Mail Reply Card (Incl 2).

Sincerely,

[redacted]
Chief, Health Physics
Safety Office

2 Incl
as stated

Copies Furnished:
HQDA (DASG-PSP-E) WASH DC 20310 (ltr to NRC only)
Dir, DARCOM ISA, Charlestown, IN 47111 (ltr to NRC & applt)
Cdr, US Army Test and Evaluation Command, ATTN: DRSTE-ST, Aberdeen Proving Ground, MD 21005 (ltr to NRC only)

FEE EXEMPT 19883

DEPARTMENT OF THE ARMY
U S ARMY ABERDEEN PROVING GROUND
ABERDEEN PROVING GROUND, MARYLAND [illegible]

STEAP-SA

18 MAR 1981

SUBJECT: Application for Amendment to Source Material License SUB-[illegible]

THRU Commander
US Army [illegible] Command
ATTN: [illegible]
Aberdeen Proving Ground, Maryland 21005

THRU Commander
US Army Material Development and Readiness Command
ATTN: DRCSF-P
5001 Eisenhower Avenue
Alexandria, Virginia 22333

TO Director
Nuclear Material Safety and Safeguards
US Nuclear Regulatory Commission
Washington, DC 20555

1. Request that Source Material License SUB-[illegible] be amended to authorize destructive testing of a maximum of 10 and up to 25 depleted uranium (staballoy) projectiles by firing into a target butt enclosure for the purpose of determining enclosure integrity.

2. The destructive testing of a maximum of 10 rounds and a minimum of 25 rounds will be used to obtain data on containment of aerosolized material.

3. The data and analysis results will be furnished to the Nuclear Regulatory Commission upon completion of testing and analysis in an amendment requesting authorization for continuation of this use by firing similar to that furnished to Aberdeen Proving Ground by letter application dated 12 May [illegible] which resulted in issuance of SUB-[illegible] Amendment 08.

[illegible]

0616 647

STEAP-CA

SUBJECT: Application for Amendment to Source Material License SUB-1344

4. This enclosure will be erected at the RTO Range (200-meter range) at Aberdeen Proving Ground. The enclosure drawing is inclosed at Inclosure 2. Testing protocols are at Inclosure 1. Record of Determination is at Inclosure 3. Completion date of the target enclosure is expected to be 1 June 1981. The Aberdeen Proving Ground Radiation Protection Committee approved the subject application for amendment in its 4 March 1981 meeting. Expeditious processing is requested.

3 Incl
as

WILLIAM E. WAYS
Colonel, CmlC
Commanding

DEPARTMENT OF THE ARMY
OFFICE OF THE SURGEON GENERAL
WASHINGTON, D.C. 20310

REPLY TO ATTENTION OF

DASG-PSP-E

12 August 1981

SUBJECT: Application for Department of Army Permit - General Electric Company, Ethan Allen Firing Range

OK

Commander
US Army Materiel Development & Readiness Command
ATTN: DRCSP-P
5001 Eisenhower Avenue
Alexandria, VA 22333

1. Subject application has been reviewed for the adequacy of the associated radiation protection program.

2. Your request for review indicated that DARCOM will not authorize firing of DU rounds at metal targets at the Ethan Allen Firing Range. However, item 10, DA Form 4337 indicated that one of the purposes for the test firing is to derive penetration data against armor plate. This contradiction requires specific clarification. It is DA policy that firing of DU rounds at hard targets is prohibited anywhere but at Aberdeen Proving Ground when proper containment exists.

3. If the test firing of source material penetrators is not against metal targets then the application's associated radiation protection program appears to be adequate. Additionally, paragraphs 4-6.7(c) and 4-6.7(b)1, DARCOM Handbook 385-100-78, require the institution of a bioassay program for all workers potentially exposed to DU.

FOR THE SURGEON GENERAL

GEORGE E.T. STEBBINS, M.D.
Colonel, MC
Chief, Preventive Medicine Consultants Division

APPLICATION FOR DEPARTMENT OF THE ARMY RADIATION AUTHORI[illegible]TION OR PERMI[illegible]

1. NAME OF APPLICANT

General Electric Company
Armament Systems Department

2. ADDRESS

Lakeside Avenue
Burlington, VT 05402

3. [illegible] INSTALLATION AND EXACT LOCATION(S) WHERE RADIOACTIVE MATERIAL [illegible]

GE operated Ethan Allen Firing Range Test Facility, Underhill, VT (Map Enclosed)

4. DEPARTMENT TO USE RADIOACTIVE MATERIAL

Engineering and K&QA

5. [illegible] NUMBERS CURRENTLY HELD

NRC License Sub No. 983

OK

6. [illegible]

M. R. Brow, Specialist-NDT
(See Attached Resume)

Ben Follett
Manager, Ethan Allen Firing Range

7. [illegible]

M. R. Brow, Specialist-NDT

8. RADIATION DEVICES

Depleted Uranium (Staballoy)
Less than 0.711% U235
98% U238 (Metallic)

9. CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM AMOUNT OF RADIOACTIVE MATERIAL

Machined bars and finished penetrators, containing 0.114 millicuries/lb.
Maximum amount under NRC License is 4500 kg.

10. STATE PURPOSE FOR WHICH RADIOACTIVE MATERIAL OR SOURCES WILL BE USED

Source material in the form of penetrators (encapsulated) will be fired from a gun mechanism (either single shot or automatic). The purpose of firing tests is to demonstrate compatibility with the gun system, derive penetration data against armor plate, and/or derive ballistics data firing into a bullet sand trap.

11. TRAINING

TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	[illegible]	[illegible]	[illegible]
a. Principles and practices of radiation protection	Mary Fletcher Hospital and UVM Burlington, VT	1962-64	X		X
b. Radioactivity measurement standardization and monitoring techniques and instruments	" "	" "	X		X
c. Mathematics and calculations basic to the use and measurement of radioactivity	" "	" "	X		X
d. Biological effects of radiation	" "	" "	X		X

12. EXPERIENCE WITH RADIATION

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Co^{60}		Radiation training at Mary Fletcher Hospital	1962-64	Radiation Therapy
Radioactive Iodine		Springfield Hospital	1964-67	Thyroid Scans
DU		General Electric Company-ASD	1968-Pres.	Gun Fire Testing

3337

DEPARTMENT OF THE ARMY
HEADQUARTERS US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA. 22333

Mr. Grucci/ses/AV 2
S: 20 July 1981

DRCSF-P/81-0074 29 June 19

SUBJECT: Application for Department of Army Permit - General Electric Compa
Ethan Allen Firing Range

HQDA (DASG-PSP-E)
WASH DC 20310

1. Forwarded for your review and comments are two copies of General Electric Company, Ethan Allen Firing Range application for DA permit.

2. This request is for the firing of depleted uranium penetrators at Ethan Allen Firing Range. Notwithstanding application, we will not authorize firing of depleted uranium penetrators against metal or other hard targets.

3. We would appreciate receiving your comments by 20 July 1981.

1 Incl
as

DARWIN N. TARAS
Chief, Health Physics
Safety Office

Mr Grucci
49340/ses

93953

POLICY ISSUE

(NEGATIVE CONSENT)

86822

-1-

May 6, 1994

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE PNO-II-94-0[illegible]

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by Region II staff (Atlanta, Georgia) on this date.

Facility	**Licensee Emergency Classification**
Department of the Navy	Notification of Unusual Event
U.S.S. Lake Erie	Alert
Pearl Harbor, Hawaii	Site Area Emergency
Dockets: 030-29462 License No. 45-23645-01	General Emergency
	X Not Applicable

Subject: MEDIA INTEREST IN INADVERTENT FIRING OF DEPLETED URANIUM (DU) PROJECTILES

On May 6, 1994, the Navy Radiation Safety Committee advised Region II of the accidental firing of two depleted uranium (DU) projectiles. The incident occurred at approximately 1:30 p.m. (local time), May 5, 1994, and involved the accidental firing of two 20mm DU rounds from the USS Lake Erie's Close In Weapons System (CIWS) while the ship was at its berth at Pearl Harbor, Hawaii. The Navy believes that the rounds, each of which contains 70 grams of DU, fell in a non-residential area near Aiea, HI. No reports of injury or property damage have been received by the licensee. The Navy has initiated an investigation into the incident and is attempting to locate the projectiles. There has been local media interest and the licensee is prepared to respond to press inquiries.

This report is for information only inasmuch as the conditions are not covered by an NRC license. RIV has been informed. The licensee has informed the State of Hawaii.

This information is current as of 12:30 p.m. on May 6, 1994.

Contact: J. Kahle
(404)331-[illegible]

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV

Walnut Creek Field Office
1450 Maria Lane
Walnut Creek, California 94596-5368

A0264

AUG 28 1997

EA 97-181

Mark R. Henschied, LTC, CM
Commander
Department of the Army
Tooele Army Depot
Tooele, Utah 84074-5008

SUBJECT: NRC INSPECTION 04-08779/97-01, AND NRC LETTER DATED MAY 19, 1997

Thank you for your letter dated June 16, 1997, in response to our letter of May 19, 1997, which requested additional information regarding the release of an outdoor area where demolition of depleted uranium projectiles occurred.

Your response provided adequate information for us to determine that the area in question satisfies the current NRC criteria for unrestricted release of soil. We have no further questions at this time.

Your cooperation is appreciated.

Sincerely,

Frank A. Wenslawski

Frank A. Wenslawski, Chief
Materials Branch

Docket No. 040-08779
License No. SUC-1391

cc: Utah Radiation Control Program Director

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No. 030-14759

License No. 01-02861-04

Report No. 01-02861-04/97-01

Licensee: Department of the Army

Location: Fort McClellan, Alabama

Dates: August 15-19, and September 5 and 22, 1997

Inspector: Drysta Mabry Bailey, Radiation Specialist

Approved By: John P. Potter, Chief
Materials Licensing/Inspection Branch 2
Division of Nuclear Material Safety

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A1237

EXECUTIVE SUMMARY

Alliant Techsystems Facility
NRC Inspection Report No. 040-08830/9700[illegible](DNMS)

The purpose of the inspections was to perform final closeout surveys of areas within the Alliant Techsystems Proving Grounds (ATPG) located in Elk River, MN. No contamination in excess of NRC guidelines was identified during the inspections in the BOFORS Chamber and outdoor pad, the Soft Catch Range, the Press Building, the Large Caliber Assembly Building, the NW SCAR Range, the pond outfall from the NE SCAR Range and the DU Burial Trench and access area. Based on reviews of final survey reports submitted by the licensee and ORISE and the results of the closeout inspections, these areas were considered to have been acceptably remediated and are therefore releasable for unrestricted use.

The inspection conducted on July 29-August 1, 1997 identified contamination within the Short 20 Range in excess of NRC release guidelines which indicated the need for additional remediation. There were also no records to demonstrate that the ground beneath the NE SCAR bullet catcher had been surveyed for contamination. In response to these findings the licensee conducted additional investigations and remediations at the Short 20 Range and the NE SCAR Range bullet catcher during September and October of 1997. In a letter dated October 1, 1997, the licensee indicated that work (investigation and remediation) at the Short 20 Range and NE SCAR Range bullet catcher had been delayed until the spring of 1998.

At the August 1, 1997, exit meeting the licensee requested that all inspection findings for ATPG be incorporated into one report. However, due to the delay in investigating and remediating the Short 20 Range and NE SCAR Range bullet catcher this report concludes that the Short 20 Range and NE SCAR Range bullet catcher are not yet remediated and verified acceptable for unrestricted use.

Inspection

A5328

CHASE ENVIRONMENTAL GROUP, INC.
environmental engineering, remediation & consulting

FINAL RADIOLOGICAL STATUS REPORT

FOR

DEPLETED URANIUM PROJECTILE TEST FIRING FACILITY

PORT CLINTON, OH

Prepared For

TRW Incorporated

September 9, 1998

8008 Vine Crest Avenue
Louisville, Kentucky 40222
(502) 327-6191
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A5436

EXECUTIVE SUMMARY

A. I. M., Inc.
NRC Inspection Report No. 040-09016/98-001

Decommissioning of the A.I.M., Inc., facility located at 62 East High Street, New Freedom, Pennsylvania, was performed under contract by Radiation Service Organization, Inc. (R.S.O., Inc.), of Laurel, Maryland, a State of Maryland licensee. On June 10, 1998, the final decommissioning radiation survey was completed by R.S.O., Inc. The results of this radiation survey were submitted to the NRC Region I for review and further action as required.

On August 24, 1998, Region I personnel conducted a confirmatory survey at this facility, the results of which agreed with those obtained by R.S.O.

A5858

EXECUTIVE SUMMARY

Alliant Techsystems Facility
NRC Inspection Report 040-08830/98001(DNMS)

The purpose of the inspection was to perform final closeout surveys of areas within the Alliant Techsystems Proving Grounds located in Elk River, Minnesota. No contamination in excess of NRC guidelines was identified within the Short 2 Range Catcher Area and the Northeast SCAR Catcher Area. Based on reviews of the licensee's final survey reports and addenda to the reports and the results of the NRC final closeout surveys, these areas were considered to have been acceptably remediated and were, therefore, releasable for unrestricted use.