455-03

NUCLEAR REGULATORY COMMISSION LICENSE AND APPLICATION FOR POSSESSION OF DEPLETED URANIUM AS CARTRIDGE PENETRATORS (SUC - 1380)

HEADQUARTERS
U.S. ARMY INDUSTRIAL OPERATIONS COMMAND
ROCK ISLAND, ILLINOIS 61299-6000

JANUARY 1997

MATERIALS LICENSE

Amendment No. 30

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

Licensee	
1. Department of the Army Commander U.S. Army Industrial Operations Command 2. ATTN: AMSIO-DMW Rock Island, IL 61299-6000	In accordance with letter dated March 17, 1997 3. License Number SUC-1380 is amended in its entirety to read as follows:
	4. Expiration Date November 30, 2002
	5. Docket or Reference No. 040-08767, SUB-1195

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.

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 Sierra Army Depot, Herlong, California; 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 temporary 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, Independence, Missouri, incident to decommissioning of facilities.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
SUC-1380

Docket or Reference Number
040-08767, SUB-1195

Amendment No. 30

11. A. Licensed material shall be used by, or under the supervision of, Stephen R. Mapley, Kelly Crooks, Gary W. Buckrop, or Patricia A. Haworth.

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

C. First alternative Radiation Safety Officer for this license is Gary W. Buckrop.

D. Second Alternate Radiation Safety Officer for this license is Patricia A. Haworth.

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 temporary storage location.

14. The licensee shall maintain records of information important to safe and effective decommissioning at the Department of the Army HQ, U.S. Army Industrial Operations Command, Rock Island, Illinois per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.

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 November 20, 1996; and

B. Letter dated march 17, 1997 (with enclosures).

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date JUN 13 1997

By Loren J. Hunter
Nuclear Materials Licensing Branch, Region III

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

JUN 13 1997

Stephen R. Mapley, Chief
Radioactive Waste Disposal Division
U.S. Army Industrial Operations Command
Department of the Army
ATTN: AMSIO-DMW
Rock Island, IL 61299-6000

Dear Mr. Mapley:

Enclosed is Amendment No. 30 to your NRC Material License No. SUC-1380 in accordance with your request.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region III office at (630) 829-9887 so that we can provide appropriate corrections and answers.

The enclosed amendment authorizes you to release for unrestricted use, Building Nos. 603, 608 and part of Building No. 1503, at McAlester Army Ammunition Plant, McAlester, Oklahoma, where contaminated manufacturing equipment had previously been stored. The amendment modifies License Items 6., 7., 8. and 9. and License Condition 10.B., accordingly.

The authorization to release the specified facilities for unrestricted use is based on your disposal of the contaminated equipment followed by the Army's close-out survey, INDUSTRIAL RADIATION SURVEY NO. 27-MH-5113-96, FACILITY CLOSE-OUT AND TERMINATION SURVEY, MCALESTER ARMY AMMUNITION PLANT, MCALESTER, OKLAHOMA. Please note that Chemrad's "USRAD and INSRAD System" survey was not considered necessary and therefore was not used as a basis for the release for unrestricted use of the specified facilities. The survey data demonstrate that the residual contamination is within NRC guidelines for unrestricted release.

Please be advised that your license expires at the end of the day, in the month, and year stated in the license. Unless your license has been terminated, you must conduct your program involving byproduct materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.

16 JUN 1997

2. Notify NRC, in writing, within 30 days:

   a. When the Radiation Safety Officer permanently discontinues performance of duties under the license or has a name change; or

   b. When the mailing address listed on the license changes. (No fee is required if the location of byproduct material remains the same.)

3. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license when a decision is made to terminate all activities involving materials authorized under the license.

4. Request and obtain a license amendment before you:

   a. Change Radiation Safety Officers;

   b. Order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;

   c. Add or change the areas of use or address or addresses of use identified in the license application or on the license; or

   d. Change ownership of your organization.

5. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

In addition, please note that NRC Form 313 requires the applicant, by his/her signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a

notice of violation, or imposition of a civil penalty, or an order suspending, modifying or revoking your license as specified in the General Statement of Policy and Procedure for NRC Enforcement Actions. Since serious consequences to employees and the public can result from failure to comply with NRC requirements, prompt and vigorous enforcement action will be taken when dealing with licensees who do not achieve the necessary meticulous attention to detail and the high standard of compliance which NRC expects of its licensees.

Sincerely,

Loren J. Hueter

Loren J. Hueter
Nuclear Materials Licensing Branch

License No.: SUC-1380
Docket No.: 040-08767

Enclosures: 1. Amendment No. 30
2. NRC Form 313

MATERIALS LICENSE

Amendment No. 29

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

Licensee	
1. Department of the Army Commander 2. U.S. Army Industrial Operations Command ATTN: AMSIO-DMW Rock Island, IL 61299-6000	In accordance with application dated November 20, 1996 3. License Number SUC-1380 is renewed in its entirety to read as follows:
	4. Expiration Date November 30, 2002
	5. Docket or Reference No. 040-08767, SUB-1195

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
C. Depleted uranium	C. Contaminated Equipment	C. 227 Kilograms

9. Authorized Use:

A. To be used for receipt, storage and transfer of military devices containing depleted uranium components.

B. and C. 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 Sierra Army Depot, Herlong, California; 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 temporary locations at U.S. Army bases anywhere in the United States.

B. Licensed material listed in Subitems 7.B. and 7.C. may be stored at the Lake City Army Ammunition plant, Independence, Missouri, and McAlester Army Ammunition Plant, McAlexter, Oklahoma incident to decommissioning of facilities.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number: SUC-1380

Docket or Reference Number: 040-08767, SUB-1195

Amendment No. 29

11. A. Licensed material shall be used by, or under the supervision of, Stephen R. Mapley, Kelly Crooks, Gary W. Buckrop, or Patricia A. Haworth.

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

    C. First alternative Radiation Safety Officer for this license is Gary W. Buckrop.

    D. Second Alternate Radiation Safety Officer for this license is Patricia A. Haworth.

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 temporary storage location.

14. The licensee shall maintain records of information important to safe and effective decommissioning at the Department of the Army HQ, U.S. Army Industrial Operations Command, Rock Island, Illinois per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.

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 November 20, 1996.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date January 21, 1997

By _____
Nuclear Materials Licensing Branch, Region III

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY INDUSTRIAL OPERATIONS COMMAND
ROCK ISLAND, ILLINOIS 61299-6000

REPLY TO
ATTENTION OF

November 20, 1996

DCS for Industrial
Risk Management

Administrator
Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Dear Sir:

This office requests renewal of license number SUC-1380, issued to the Headquarters, U.S. Army Industrial Operations Command, for the possession of depleted uranium as cartridge penetrators. We have enclosed the application (reference control number 399337).

This license renewal application remains essentially the same as the license currently in effect with the following modifications:

a. This application will provide license coverage, without amendment, for new models of depleted uranium kinetic energy penetrator type munitions.

b. This application will provide license coverage for all models of Department of Defense depleted uranium kinetic energy penetrator type munitions.

c. This application only authorizes licensed activities at Army installations. The Navy provides license coverage for depleted uranium munitions at Navy and Marine Corps installations under the Navy master license, and, specifically, by internal Navy permit NRMP Number 13-00164-L1NP.

d. Information pertaining to the depleted uranium-contaminated firing range at Lake City Army Ammunition Plant and the storage of depleted uranium-contaminated equipment at McAlester Army Ammunition Plant has been incorporated into supplement 2, sections B and C respectively.

Mr. John Manfre, Headquarters, U.S. Army Materiel Command, Safety Office, (703) 274-9340, has approved this license renewal action.

The points of contact are Messrs. Kelly Crooks, Gary Buckrop, and Steve Mapley, AMSIO-DMW, (309) 782-0338, (309) 782-2969, and (309) 782-2933 respectively, electronic mail addresses kcrooks@ria-emh2.army.mil, gbuckrop@ria-emh2.army.mil, and smapley@ria-emh2.army.mil respectively.

Sincerely,

James P. Fairall, Jr.
Colonel, U.S. Army
Chief of Staff

Enclosure

Copies Furnished:

Commander, U.S. Army Materiel Command, Attention: AMCSF-P, 5001 Eisenhower Avenue, Alexandria, Virginia 22333-0001
Naval Sea Systems Command Detachment, Radiological Affairs Support Office, Attention: Mr. Bill Morris, NWS P.O. Drawer 260, Yorktown, Virginia 23691-0260
Commandant of the Marine Corps, Safety Division, Attention: Lieutenant Commander Gorsuch, 2 Navy Annex, Washington, D.C. 20380-1775
Headquarters, Air Force Medical Operations Agency, Attention: SGOR/Lieutenant Colonel Donnelly, 8901 18th Street, Brooks Air Force Base, Texas 78235-5217
Commander, U.S. Army Industrial Operations Command, Attention: AMSIO-SMA-P/Mr. Ed Jamieson, Rock Island, Illinois 61299-6000

NRC FORM 313 (7-96)
10 CFR 30, 32, 33
34, 35, 36, 39 and 40

U. S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 7/31/99

Estimated burden per response to comply with this information collection request: 7 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. Forward comments regarding burden estimate to the Information and Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0120), Office of Management and Budget, Washington, DC 20503. NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

APPLICATION FOR MATERIAL LICENSE

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

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:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION II
101 MARIETTA STREET, NW, SUITE 2900
ATLANTA, GA 30323-0199

IF YOU ARE LOCATED IN:

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

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

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 SUC-1380

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include Zip code)*
   Department of the Army
   HQ, U.S. Army Industrial Operations Command
   Attention: AMSIO-DMW
   Rock Island, Illinois 61299-6000

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED
   Worldwide use by U.S. Army civilian and military personnel.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION
   Mr. Kelly Crooks

   TELEPHONE NUMBER
   (309) 782-0338

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 Supplement 1

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

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

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.
   Supplement 3

9. FACILITIES AND EQUIPMENT.
   Supplement 4

10. RADIATION SAFETY PROGRAM.
    Supplement 5

11. WASTE MANAGEMENT.
    Supplement 6

12. LICENSEE FEES *(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 CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OFJUNE 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
James P. Fairall, Jr., Colonel, U.S. Army, Chief of Staff	James P. Fairall	20 NOV 96

FOR NRC USE ONLY

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

SUMMARY

1. Headquarters, U.S. Army Industrial Operations Command (HQ, IOC), formerly Headquarters, U.S. Army Armament, Munitions and Chemical Command (HQ, AMCCOM), located at Rock Island, IL, has the logistical responsibility to provide ammunition to the U.S. Joint Military Services (Army, Air Force, Navy, and Marine Corps). This application is a request for renewal of license number SUC-1380, in its entirety. The SUC-1380 license is for the possession of depleted uranium (DU) as cartridge penetrators. The Army requests the option to use the words "depleted uranium" and the acronym "DU" interchangeably.

2. The original SUC-1380 license was granted by the Nuclear Regulatory Commission (NRC) in June 1980. The last license renewal was granted on 20 October 1988, with an expiration date of 31 October 1993. This expiration date was extended twice. A renewal application was submitted in October 1995 and recognized by the NRC as a timely submission. This document is a revision of the October 1995 renewal application with changes recommended by NRC, Region III.

3. The Army recognizes the jurisdiction of the NRC within the boundaries of the U.S. Overseas, the Army will abide by Army regulations or host nation agreements.

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

a. The storage and handling of ammunition containing DU components at Army locations worldwide. Ammunition containing DU components will primarily be stored as War Reserve Material for combat use by the U.S. Joint Military Services. Routine firing of DU ammunition will not be covered by this license.

b. License coverage of the DU-contaminated firing range at Lake City Army Ammunition Plant (AAP), MO (supplement 2, section B, page 2-7).

c. License coverage of the DU-contaminated equipment that is currently held in storage at McAlester AAP, OK (see supplement 2, section C, page 2-9).

5. Hazards associated with the activities authorized by this license application will be minimal, and the concept of "as low as reasonably achievable" (ALARA) will be observed.

Application for NRC Source Material License for Possession of DU as Component Parts of Ammunition Items

Index

Supplement 1 (Reference: NRC Form 313, Block 5)

RADIOACTIVE MATERIAL

1. Element and Mass Number: U-238 depleted in the U-235 isotope.

2. Chemical and Physical Form: Solid metal alloy, not less than 95 percent U-238.

3. The maximum amounts that may be possessed at any one time are as follows:

a. Depleted uranium for use as components in conventional ammunition: 42,000,000 kilograms.

b. Depleted uranium on the Lake City AAP firing range, Independence, MO: 14,000 kilograms.

c. Depleted uranium on equipment in storage at McAlester AAP, McAlester, OK: 227 kilograms.

Supplement 2 (Reference: NRC Form 313, Block 6)

PURPOSES FOR WHICH THE SOURCE MATERIAL WILL BE USED

INTRODUCTION: The following three sections describe how the source material, DU, will be used.

SECTION A. DU AMMUNITION

1. General: The licensee will use DU as a component part of conventional ammunition items. Newly developed DU ammunition items will be considered for license coverage only after the developing organization, or service, has certified to the licensee that the item has been properly tested and is suitable for military use. Once approved by the licensee, newly developed DU ammunition items will be covered by this license without license amendment unless significantly different in design from currently fielded DU ammunition items.

1.1 The source material will not be used in any chemical, nuclear, metallurgical, manufacturing, or direct processing. All DU ammunition components are manufactured and assembled under separate NRC or agreement state licenses. The licensee will receive the ammunition items with the DU components fully assembled and packaged.

2. Authorized operations: Ammunition containing DU components will be involved in the following peacetime activities: Storage, inspection, minor maintenance, transportation, and render-safe procedures. As military necessity dictates, DU ammunition may also be uploaded into, and deployed with, Army weapon systems.

2.1 Storage: Conventional ammunition items containing DU components developed by the various services within the Department of Defense (DOD) is authorized for storage at Army installations worldwide.

2.1.1 Ammunition items are primarily stored in standard ammunition storage structures which are located inside security fenced ammunition areas. Due to the security, sensitivity, and explosive hazard associated with ammunition items, storage facilities are constructed to strictly limit the access of personnel, thereby reducing the potential for loss of control and for exposure of personnel to hazards.

2.1.2 Occasionally, as operational necessity dictates, ammunition is also temporarily stored outdoors within security fenced areas. The ammunition to be temporarily stored in these outdoor areas will be kept on pallets in their shipping containers and/or inside transport vehicles. These temporary ammunition storage areas will be located on Army installations that have 24-hour guard forces and will be provided security patrols IAW ammunition security procedures.

2.1.3 The storage limitations for ammunition items containing DU will be established on an item-by-item basis. Limitations will be based upon the explosive hazard of each item and the physical capacity of the storage structure or vehicle. The quantity of DU within a storage structure or vehicle will not be a limiting factor. The explosive hazard classification for ammunition items is determined IAW DOD Explosives Hazard Classification Procedures.

2.1.4 There are two categories of storage covered by this application: bulk storage and non-bulk storage. Bulk storage represents long-term storage of large amounts of ammunition. Bulk storage installations can store a maximum of 10 million kilograms of DU. Authorized bulk storage installations are listed below:

a. Anniston Army Dept, Anniston, AL.

b. Bluegrass Army Depot, Richmond, KY.

c. Crane Army Activity, Crane, IN.

d. Hawthorne Army Depot, Hawthorne, NV.

e. Letterkenny Army Depot, Chambersburg, PA.

f. McAlester Army Ammunition Plant, McAlester, OK.

g. Red River Army Depot, Texarkana, TX.

h. Seneca Army Depot, Romulus, NY.

i. Sierra Army Depot, Herlong, CA.

j. Tooele Army Depot, Tooele, UT.

2.1.5 Non-bulk storage covers any Army installation that has a requirement to store lesser amounts of DU ammunition in support of military operations. Non-bulk storage installations can store a maximum of 50,000 kilograms of DU. Although not considered an all-inclusive list, typical examples would be installations that store DU ammunition in support of deployment, retrograde, shipment consolidation, or repair of military vehicles. Storage of DU ammunition under this category can range from a few days to long term.

2.2 Inspection: DU ammunition stored at Army installations is inspected when directed by HQ, IOC. Inspection procedures include a visual inspection for defects such as damage or corrosion. Disposition of unserviceable DU munitions at Army installations is determined by HQ, IOC. Inspection procedures that require functioning, firing, destruction, or disassembly of DU ammunition items will be performed under separate NRC or agreement state license.

2.3 Minor Maintenance: Occasionally, inspection of DU ammunition items will reveal conditions that require minor maintenance activities be performed to return them to a fully serviceable condition. The following types of minor maintenance activities that do not require disassembly, destruction, or functioning, or the exposure of the DU components, may be performed when proper approval is granted by HQ, IOC:

a. Corrosion removal from non-DU components.

b. Touch-up painting and remarking of complete rounds.

c. Repackaging of complete ammunition items.

d. Preservation and repair of packaging.

2.3.1 Since minor maintenance operations do not involve direct or prolonged contact with the DU component of the munitions, no additional instructions or safety precautions which deviate from normal handling and storage instructions are required. Warning statements in technical manuals are considered adequate radiological instructions.

2.3.2 All ammunition items eventually reach a point where they require extensive renovation, or they exceed their useful life. Depleted uranium ammunition that has been designated for renovation or demilitarization is returned through the supply system to a separately licensed facility to perform the required work.

2.4 Transportation: Transportation of ammunition items with DU components will comply with all transportation regulations applicable at the time of shipment. Packaging, marking, and labeling of DU ammunition items will be IAW all applicable transportation criteria unless specifically exempted. Under Department of Transportation (DOT) Exemption 9649, DOD is allowed to ship DU ammunition items according to the primary explosive hazard.

2.5 Uploading and Deployment: Ammunition items containing DU components may be uploaded into Army weapon systems, and those weapon systems may be deployed to provide a ready response in the event of belligerent acts against the U.S. Such ammunition items will be handled IAW the sensitivity and explosive hazard associated with each item. Firing of ammunition items containing DU components is not authorized except in response to hostilities or belligerent acts against the U.S.

2.6 Render-Safe Operations: The possibility exists that ammunition items containing DU components may be damaged in handling or shipping to the extent that the items are considered unsafe. On these occasions, personnel trained in the handling and disposal of damaged munitions items will be called upon to render the item safe for handling and shipment. The procedures used will be based upon the explosive hazard associated with the item. Normally, render-safe procedures for munitions items containing DU components will not include incineration or detonation.

2.6.1 Normal render-safe procedures for a round of DU ammunition will result in the separation of the two major components of the round: the cartridge case and the projectile assembly. The projectile assembly, which contains the DU component, will be temporarily stored and then transported to a separately licensed facility for study, salvage, or disposal. Normally, DU components resulting from render-safe operations will not be stored in the same structure as serviceable DU munitions.

3. Amount of Material: The amount of DU involved in the activities described in paragraph 2 above will be based upon the explosive hazards associated with the ammunition item, the physical capacity of the storage structure or vehicle, and the operational requirements associated with the activity. Anticipated quantities of source material are discussed in the following paragraphs.

3.1 Storage: The anticipated quantity of DU in a single earth-covered storage structure could typically range between 10,000 and 300,000 pounds, with some storage configurations approaching 450,000 pounds. The quantity of DU in an above-ground structure could range between 100,000 and 600,000 pounds, with some storage configurations approaching 1,700,000 pounds. The anticipated maximum quantity of DU to be held in a temporary outdoor storage area will be 80,000 pounds, which is the amount that can be carried by two rail cars.

3.2 Transportation: The anticipated quantity of DU in a single road or rail-transport vehicle is based upon the gross weight limitation imposed on the vehicle. Rail transport vehicles could contain as much as 40,000 pounds of DU, while road transport vehicles could contain up to 15,000 pounds of DU. Typical peacetime shipments of DU ammunition by an ocean vessel could involve between 300,000 and 900,000 pounds of DU.

3.3 Inspection: Inspection operations typically involve from one box to several pallets of ammunition. The anticipated quantity of DU involved in inspection operations could range from 10 pounds to 2,000 pounds.

3.4 Uploading and Deployment: The quantity of DU ammunition uploaded and deployed in Army weapon systems will be based upon operational necessity and the physical capacity of the weapon system. Individual weapon systems may contain as much as 2,000 pounds of DU ammunition.

3.5 Minor maintenance: Minor maintenance operations typically involve from one box to several pallets of ammunition. The anticipated quantity of DU involved in minor maintenance activities could range from 10 pounds to 3,500 pounds of DU.

3.6 Render-safe: Render-safe operations are put into effect in response to unplanned events which damage ammunition and cause it to be unsafe for handling or shipment. Since events which damage ammunition are unplanned, the quantity of DU to be involved in a render-safe operation cannot be forecast; however, it is anticipated that less than 25 pounds of DU would be involved at any one time.

4. Accountability: The Army has developed specific procedures to provide for accountability of ammunition at storage locations, by military groups, and in transit between installations. Additionally, the Army has developed a centralized reporting system to provide worldwide stockpile visibility. This system is used to assist in stockpile, production, and logistics planning. The centralized reporting system used by the Army tracks munitions storage and shipments in 100-round increments. Ammunition that has been issued to individual Army units is not maintained within the centralized reporting system.

4.1 The inventory records kept by each installation and each unit that has been issued ammunition items are used for accountability proposes. Additionally, the inventory records associated with ammunition shipments are used for accountability. The inventory procedures used for shipments and by installations and units that possess ammunition items account for ammunition in single round increments. In addition to the rigorous inventory and accountability procedures, all ammunition items are maintained under constant physical security.

4.2 Installation inventory records are verified annually IAW Army ammunition inventory procedures which include the performance of a physical count. Some installations may perform this verification more often. Inventory records are updated after each receipt or disbursement. While a storage structure is open to move ammunition in or out, installation personnel may perform a spot check of all inventory in that structure.

4.3 Ammunition being transferred from one location to another is subjected to a 100 percent physical inventory to verify that the actual quantity corresponds to the quantity on the document authorizing the shipments. For shipments to other installations, a notice of the shipment is sent to the receiving installation separate from the actual shipment. Inventories of incoming shipments are verified against the shipping documents. Additionally, a copy of the incoming inventory is sent to the installation originating the shipment. This inventory notifies the point of origin that the shipment has arrived.

4.4 Ammunition that is issued to individual military units on an installation is treated as accountable property. An individual within the unit that receives the ammunition signs for it. This individual is personally accountable for all of the ammunition within the unit. This responsibility is relinquished only when the ammunition is expended or turned into an ammunition storage activity on an installation. Ammunition that is turned in to an installation is added to that installation's inventory, and a receipt is issued to the unit showing the disposition of the ammunition.

4.5 Physical security is maintained by storing ammunition inside secure, limited-access areas, such as: security fenced areas (chain-link topped with barbed wire) and/or locked storage structures. Army installations storing ammunition have a 24-hour a day guard force, and ammunition storage areas are provided security patrols. Entry to ammunition storage areas is limited to specifically designated individuals. Additionally, only selected individuals are allowed access to the keys to unlock storage areas.

SECTION B. DU CONTAMINATED FIRING RANGE AT LAKE CITY AAP

1. Lake City AAP is a Government-owned, contractor-operated facility located in Independence, MO. From 1941, when the installation began operation, until 1985, Remington Arms Company operated the facility.

2. During the early 1960's, Remington Arms, while under Army contract, developed, manufactured, and tested a 20mm DU spotter round known as the XM101. Each round contained approximately 206 grams of DU. The testing program consisted of firing the projectiles onto designated impact areas at 1,750 and 2,188 yards. Remington operated under NRC license SUC-1195 until 1985. When Remington's contract was not extended in 1985, the Army assumed licensure for the DU on the firing range under the Army storage and possession license SUC-1380.

3. In 1968, the XM101 project was canceled. Remington then proceeded to demilitarize approximately 45,000 rounds by firing them into a sand-filled bullet catcher 600 yards from the firing house. The bullet catcher sand was sifted, and the large DU fragments were collected, containerized, and shipped off site for burial at a low-level radioactive waste disposal site. The residual sand was piled in an area (known as the sand pile) north of the active range.

4. There are four areas of concern within the confines of the Lake City firing range that are contaminated with DU. These are the 600-yard bullet catcher area, the 1,750-yard impact area, the 2,188-yard impact area, and the sand pile area located north of the active range. Contaminated areas are posted with "Caution Radioactive Materials" signs.

5. The Lake City firing range is actively used (although NOT for testing or demilitarization of DU ammunition); consequently, admission to the range area is strictly controlled. The area surrounding the range is completely enclosed and secured from unauthorized entry at all times. Security provided the firing range will be reviewed annually.

6. Annual water samples have been obtained from several locations in and around the area of the firing range since 1988. The water samples are analyzed, and the results are provided to the NRC, Region III, located in Lisle, IL. To date, none of the samples have produced a radiological anomaly. The well-monitoring program will continue as long as there is licensed material on the range.

7. In the event significant amounts of DU contamination are found in any of the water samples, the Army is prepared to take action to eliminate the source of contamination. Water-sample testing would be increased to quarterly until it is determined the source of contamination has been eliminated.

SECTION C. DU CONTAMINATED EQUIPMENT STORED AT MCALESTER AAP

1. Until August 1995, the Army had industrial machinery and equipment (hereafter referred to just as equipment) in storage at McAlester AAP, McAlester, OK, that was contaminated with DU. This equipment was stored in buildings 50PC-603, 50PC-608, and 50PC-1503. This equipment was determined to be obsolete. The Army contracted with Scientific Ecology Group for the equipment to be transferred to their license and smelted at their Tennessee facility.

2. It is estimated that there was 60 pounds of DU on this equipment. The equipment was wrapped in two layers of plastic and sat on wooden skids. The storage buildings are in a fenced area with security guards at the entrances. In addition, the storage buildings are locked, and only radiation protection personnel have access to the keys. Periodic surveys were performed by the installation radiation protection officer with no anomalies.

3. The U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) performed a radiological survey of these buildings in August 1996. Since these storage buildings at McAlester are currently no longer being used, it is hoped the CHPPM survey results will show that the buildings can be released for unrestricted use.

4. Until the Army determines it no longer has a need, a maximum of 500 pounds (227 kg) of DU is requested for possible future storage of contaminated equipment.

Supplement 3 (Reference: NRC Form 313, Blocks 7 and 8)

INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE

1. Headquarters, U.S. Army Industrial Operations Command: The HQ, IOC, is the principal field operating command for the Single Manager for Conventional Ammunition. The Commander, HQ, IOC, has the responsibility for the life-cycle commodity management of conventional munition items, including munitions containing DU components. This responsibility includes acting as custodian of the NRC license for subject licensed material. The HQ, IOC, command-level radiation protection officer (RPO) and alternates provide health physics guidance and serve as the technical advisors to the Commander, HQ, IOC. The HQ, IOC, license manager acts for the commander to ensure full compliance with the NRC license provisions.

1.1 As licensee, the Commander, HQ, IOC, ensures the RPOs at those installations storing DU ammunition implement the requirements of this license. Assistance and guidance will be extended by HQ, IOC, to each command or installation storing HQ, IOC, licensed DU munitions. To verify that license requirements are met, the Army inspects these installations periodically.

2. Other Army Commands: Each command outside of HQ, IOC, is responsible for implementing the provisions of the license. Each using command will designate a command level RPO to have oversight of its subordinate installations.

3. Bulk Storage Installations: Each bulk storage installation will designate an RPO and alternate and will ensure that they have training commensurate with their responsibilities. These installation RPOs will have, as a minimum, one of the following:

a. Eighty hours of formal training to include the following:

(1) Principles and practices of radiation protection.

(2) Radioactivity measurements, monitoring techniques, and the use of instruments.

(3) Mathematics and calculations basic to the use and measurement of radioactivity.

(4) Biological effects of radiation.

(5) Applicable Federal and Army regulations.

b. Successful completion of the U.S. Army Radiological Safety Course (4JF3) satisfies this requirement.

4. Non-bulk Storage Locations: Installations in this category of storage will designate a radiologically trained person responsible for the safe storage and use of radioactive materials. This person will have training and experience commensurate with his/her responsibilities.

Supplement 3, Enclosure 1
(Reference: NRC Form 313, Blocks 7 and 8)

RESUMES: LICENSE MANAGER, RPO, AND ALTERNATE RPO

Resume of Training and Experience
Stephen R. Mapley
Chief, Radioactive Waste Disposal Division

General Educational Background:

Bachelor of Science, Systems Engineering, 1974, University of Arizona, Tucson, Arizona.

Masters of Industrial Engineering, 1976, Texas A&M, College Station, Texas.

Current Position: July 95 - Present:

Chief, Radioactive Waste Management Division: Serves as the Program Manager of the worldwide radioactive waste program and related multi-faceted projects on behalf of the Department of Defense (DoD). Serves as License Manager on Nuclear Regulatory Commission licenses issued to the Industrial Operations Command. Ensures adequate resources are provided for the management of command licenses to ensure compliance with Federal, State, and Department of Defense regulations. Responsible for establishing, implementing, and enforcing the policies and responsibilities for the storage, transportation, and disposal of unwanted radioactive material. Is responsible for establishing and providing uniform guidance and training for DoD personnel on storing, packaging, and transporting radioactive waste.

Previous Program Management Positions:

May 91 - Jul 95. Chief, National Maintenance Point Division: Responsibilities as the National Maintenance Point for Conventional Ammunition included management of the DoD Conventional Ammunition Demilitatrization Program performed in the United States, maintenance and renovation of DoD wholesale ammunition inventory and Ammunition Peculiar Equipment.

Apr 81 - Jan 83. Chief, Production Support & Equipment Replacement (PS&ER) Program: Managed the Army's capital reinvestment program that maintained 13 active Army Ammunition Plants. This program included construction, equipment replacement and modernization of production support facilities.

Resume of Training and Experience
Kelly W. Crooks
Industrial Operations Command Health Physicist

1. **General Educational Background:**

Bachelor of Science, 1982, University of Iowa, Iowa City, Iowa. Major: Civil Engineering

Graduate Study, 1983, University of Iowa; Civil Engineering.

2. **Radiation Safety and Related Training:**

Course	Duration	Completion
LLRW Packaging, Transportation and Disposal Hilton Head, SC	40 hours	May 94
Applied Health Physics Oak Ridge, TN	200 hours	Apr 93
LLRW Packaging, Transportation and Disposal Las Vegas, NV	40 hours	May 92
OSHA Hazardous Materials Barnwell, SC	40 hours	Feb 92
Nuclear Accident/Incident Response Force Training Rock Island Arsenal, IL	40 hours	Apr 90
Senior Officer Nuclear Accident Course Kirtland AFB, NM	40 hours	Jun 89
Radioactive Waste Guidance Rock Island Arsenal, IL	40 hours	Apr 89
Radiation Protection Internal Review Fort Belvoir, VA	40 hours	Aug 88

Course	Duration	Completion
Health Physics Instrumentation and Air Sampling Fort Belvoir, VA	40 hours	Apr 88
Radiological Safety Fort McClellan, AL	120 hours	Jan 88
Depleted Uranium Safety Fort Belvoir, VA	40 hours	Nov 87
Radiological Safety I U.S. Army Institute of Professional Development	13 hours	Oct 87
Laser Microwave Hazards Aberdeen Proving Ground, MD	40 hours	Apr 87
Radioactive Material Shipping Regulatory Awareness Columbia, SC	40 hours	Nov 86
Industrial X-Ray and Gamma Radiation Protection Fort Belvoir, VA	40 hours	Aug 86

3. **Experience with Radioisotopes:**

Am241 Cs137	Soil density gauges, Alpha Testing, Dallas, TX, 1984-86
Am241 Co60 H3 Ni63 Pm147 Ra226 Th232 U238	Quality assurance testing, license management, packing and shipping of radioactive and mixed waste, and project management of radioactive and mixed waste remediations, U.S. Army Armament, Munitions and Chemical Command, Rock Island, IL, 1986-present

4. **General Health Physics Background:**

Senior Health Physicist for Headquarters, U.S. Army Industrial Operations Command Radioactive Waste Disposal Office, 1995 to present. Establishes, implements and enforces the policies and responsibilities for the handling, packaging, storage, transport, processing and disposal of low-level radioactive waste (LLRW). Provides instructions to Department of Defense generators for shipments of LLRW, acts as DoD representative on technical issues and manages the health physics program associated with LLRW. Also acts as Radiation Safety Officer for management of two Nuclear Regulatory Commission (NRC) licenses.

Health Physicist for Headquarters, U.S. Army Armament, Munitions and Chemical Command (AMCCOM), 1986 to 1991. Includes advising Command Group on radiological safety matters; preparing NRC license applications, amendments, and renewals for AMCCOM-managed radioactive commodities; reviewing and formulating publications regulating radiation safety; serving as member of On-Scene Commander's Staff for response to radiation incidents/accidents; providing assistance and review of applications for NRC licenses and Department of the Army authorizations and permits for subordinate installations and depots storing licensed items of supply for compliance with Federal and U.S. Army regulations; providing certification and direction on the packaging, marking, labeling, and shipment of U.S. Army-generated radioactive waste for processing/storage/disposal; providing project management of remedial activities.

Resume of Training and Experience
Gary W. Buckrop
Industrial Operations Command Health Physicist

1. **General Educational Background**:

Bachelor of Science, July 1987, Saint Ambrose University, Davenport, Iowa. Major: General Physics

2. **Radiation Safety And Related Training**:

Course	Duration	Completion
Radioactive Waste Guidance (Chem Nuclear Inc.), Columbia, South Carolina	40 hours	June 95
Radiological Safety, U.S. Army Chemical School, Fort McClellan, Alabama	120 hours	February 94
Basic Radiation Protection and Tritium Illumination Devices (Allied Technology Group, Inc.), Davenport, Iowa	20 hours	November 92
Ammunition Manager Internship, U.S. Army Defense Ammunition Center and School, Savanna Army Depot, Illinois * Includes 3 week subcourse on Nuclear Weapons Familiarization.	16 months*	April 1989

3. **General Health Physics Background**:

a. November 1992 - July 1995. U.S. Army Armament, Munitions and Chemical Command (AMCCOM), Safety Office, Rock Island, Illinois, Health Physicist. Major job duties: preparing Nuclear Regulatory Commission license applications, amendments, and renewals for AMCCOM-managed commodities; working various depleted uranium ammunition issues; performing inspections; taking water samples; and providing assistance and review of applications for NRC licenses and Department of Army authorizations and permits for subordinate installation and depots storing licensed items of supply for compliance with Federal and U.S. Army Regulations.

b. July 1995 - present. U.S. Army Industrial Operations Command, Radioactive Waste Division, Rock Island, Illinois, Health Physicist. Current job duties encompass: licensing issues, performing inspections, taking water samples, and radioactive waste disposal actions.

Resume
of
Patricia A. Haworth

PERSONAL:

Address:	2701 E. Locust St. Davenport, Iowa 52803
Telephone:	Work: (309) 782-1766 Home: (319) 355-0816
Date of Birth:	June 7, 1951
Place of Birth:	West Union, Iowa
Maiden Name:	Patricia A. Schmelzer

POSTGRADUATE EDUCATION:

"Mixed Waste Handling and Interim Storage Training"
Chem-Nuclear Systems, Inc., Knoxville, TN
June 6 - 9, 1995

"Radioactive Waste Guidance Course"
Chem-Nuclear Systems, Inc., Columbia, SC
May 1 - 5, 1995

"Accident/Incident Investigation Workshop"
presented by EG&G InterTech, Inc.
Sept. 9 - Sept. 13, 1991

Fermi 2 "Technical Staff and Management Training Program"
Fermi 2 Training Center, Mar. - June 1989

"Applied Health Physics"
Oak Ridge Associate Universities, Oak Ridge, TN
Sept. 14 - Oct. 16, 1987

15 Semester hours of graduate credit in science education.
University of Iowa, Iowa City, Iowa, Jan. 1983 - Dec. 1984

"Environmental Radiological Health Physics"
University of Iowa, Iowa City, Iowa Sept. - Dec. 1982

"Radiochemistry for State Regulatory Personnel"
sponsored by the Nuclear Regulatory Commission,
Idaho Falls, Idaho, Feb. 9 - 13, 1981

EDUCATION:

B.S., University of Iowa, Iowa City, Iowa 1976
Major: General Science
Areas of Concentration: chemistry & zoology

concerns, prepare responses to the NRC, INPO, and quality assurance, assess the effectiveness of ALARA controls, establish and maintain a historical data base of radiation work permits, evaluate problems encountered with work methods, planning, plant systems, and health physics practices. Responsibilities include conducting pre-job planning and briefings; preparation of annual ALARA budget; writing procurement justifications; and participation in emergency response organization.

Jul. 1984 - Feb. 1987
Health Physicist
Duane Arnold Energy Center, Palo, Iowa
Primary duties included monthly dose calculations for 10CFR20 and 10CFR50 compliance, preparation of Semi-annual Radiological Effluent and Annual Environmental Reports, review chemistry data and surveillance test procedures, writing new and revising old procedures, and quality control of meteorological data. Responsible for supervision of Environmental Monitoring Program, implementation of Appendix I revisions to Technical Specifications, Offsite Dose Assessment Manual compliance, operation of Effluent Monitoring System, supervision of offsite Radiological Laboratory for Emergency Preparedness, and assist in supervision of chemistry technicians.

Jul. 1982 - Jul. 1984
Chemist
University of Iowa, Iowa City, Iowa

Nov. 1974 - June 1982
Laboratory Technician
University of Iowa, Iowa City, Iowa

AWARDS:
Iowa Electric 1986 Outstanding Performance Award
Who's Who of American Women 1988/1989
Who's Who in Finance and Industry 1989/1990

CERTIFICATES:
Technical Staff and Managers Initial Training 1989
Contracting Officers Representative 1995

PROFESSIONAL ORGANIZATIONS:
Health Physics Society Plenary Member

REFERENCES:
Will be furnished upon request.

Supplement 4 (Reference: NRC Form 313, Block 9)

FACILITIES AND EQUIPMENT

1. Facilities: The DU authorized by this application and the resulting license will not be involved in operations producing fumes, dusts, mists, or gases. As a result, special ventilation systems, special handling equipment, or protective equipment will not be required.

1.1 Ammunition containing DU components will be stored on secure facilities as described in paragraphs 2.1.1, 2.1.2, and 4.5 of supplement 2.

2. Equipment: The following radiation equipment, or its equivalent, is available to facilities for routine and emergency monitoring:

a. Beta-Gamma radiation survey meter AN/PDR-27, with end window density 1.5mg/cm^2, range 0.01mR/hr to 500mR/hr, two or more per facility.

b. Alpha radiation survey meter AN/PDR-60, with window thickness 1.5mg/cm^2, sensitivity range 1 - 2,000,000 cpm.

2.1. It should be noted that the radiation detection equipment listed above is in the process of being phased out of the Army system in favor of the AN/VDR 2 and the AN/PDR 77.

2.2 Instrumentation used for health and safety purposes is calibrated at least annually IAW standard calibration procedures traceable through the National Institute of Standards and Technology.

Supplement 5 (Reference: NRC Form 313, Block 10)

RADIATION SAFETY PROGRAM

1. Controls: The Army, down through the chain-of-command to individual installations, has developed detailed radiation safety programs to protect employees and the public from the hazards associated with ionizing radiation. The procedures for use with ammunition items containing DU include, but are not limited to:

a. Annual radiological surveillance of at least 50 percent of the total number of storage structures at each installation. Other locations, such as inspection workshops and maintenance lines, will be surveyed quarterly during periods of activity.

b. Local inventorying and accountability of ammunition items containing DU components.

c. Periodic inspections and evaluations for storage facilities by commands having jurisdiction over the facility.

d. Maintaining a working environment where exposure to ionizing radiation is ALARA.

1.1 Installation RPOs will implement radiation protection programs at their installations IAW license conditions and Federal regulations.

1.2 Publications are available that contain information on DU ammunition items and weapon systems that can be uploaded with DU ammunition. These publications provide safety information and user instructions. Provided at enclosure 1 to this supplement is an example of the type of information provided.

2. Surveillance: Supplementing the controls described in paragraph 1 above, the Department of the Army, in its role as the Single Manager for Conventional Ammunition for the Joint Services, operates the Quality Assurance Specialist Ammunition Surveillance (QASAS) program. The QASAS are individuals trained specifically to perform surveillance inspections which verify the condition and serviceability of all ammunition items in the DOD stockpile.

2.1 Quality Assurance Specialist Ammunition Surveillance use published inspection criteria to visually inspect DU ammunition at locations and times determined by HQ, IOC.

2.2 DU ammunition inspection criteria includes inspection for corrosion product. Evidence of DU corrosion may indicate that additional inspection and investigation is necessary to determine the cause and extent of the problem. Inspection intervals and criteria, as set by HQ, IOC, allows for adequate detection of corrosion problems.

3. Radiation Levels: Radiation levels on the exterior of packaged and unpackaged ammunition items containing DU components are such that personnel monitoring is not required for routine storage, handling, and transportation of ammunition items.

3.1 If unexpected situations arise, the local person providing radiation safety oversight or the HQ, IOC, RPO will institute appropriate administrative protective measures. If operational considerations do not permit such administrative limitations, appropriate personnel dosimetry will be instituted.

3.2 Unless personnel dosimetry is required, storage areas will be considered radiologically unrestricted areas. No eating, drinking, or smoking will be allowed in ammunition storage structures. As required by NRC guidance, exposure to ionizing radiation will be limited to levels that are ALARA.

4.0 Posting and Employee Notification: Facilities used for storing and maintaining ammunition items containing DU components will be posted IAW the requirements of 10 CFR. Copies of the following documents may be requested, or information pertinent to these documents obtained, by contacting the HQ, IOC, Radiation Protection Officer (RPO), DSN 793-0338/2969/1766, or commercial (309) 782-0338/2969/1766:

a. 10 CFR Part 19 - Notices, Instructions, and Reports to Workers; Inspections.

b. 10 CFR Part 20 - Standards for Protection Against Radiation.

c. 10 CFR Part 21 - Reporting of Defects and Noncompliance.

d. Section 206 of the 1974 Energy Reorganization Act.

e. NRC Form 3.

f. NRC License application and conditions.

4.1 Weapon systems uploaded with DU ammunition will not be posted. The overwhelming need for camouflage and concealment to enhance the survivability of military weapon systems, their crews, and the ammunition they fight with requires this deviation from U.S. based NRC regulations.

5. Safety Procedures: The storage, handling, and transportation procedures used with ammunition items containing DU will be IAW DOT and NRC regulations. These regulatory procedures will be in addition to procedures used with other ammunition items of the same explosive hazard classification and storage compatibility group.

5.1 Storage and handling: The Army has developed detailed practices for safe storage and handling of all ammunition items in the DOD war reserve stockpile. These procedures are geared to reducing the likelihood of fires, explosions, and physical damage to the ammunition items. Each installation that is authorized to store, handle, or transport ammunition items has implemented safety and security procedures to reduce the likelihood of accidents involving the munitions. The safety procedures include, but are not limited to:

a. Housekeeping procedures to minimize or eliminate unnecessary combustible material in and around storage areas, work areas, and transport vehicles.

b. Use of lightning protection systems around storage and work areas.

c. Regular inspections of work and storage areas and transport vehicles.

d. Securing DU ammunition items within specially designed secure areas and storage structures on the installation and in vehicles during transit.

5.2 Transport: Procedures used by the Army to transport ammunition items have resulted in a relatively accident-free environment. Predominantly, the small number of incidents that have occurred have consisted of scratches and scrapes on vehicles and packages, with little or no damage to the cargo being transported.

6. Emergency Response: Emergency procedures have been developed for handling, storage, and transportation accidents involving DU ammunition items. These procedures are detailed in Technical Bulletin (TB) 9-1300-278, which is distributed throughout the Army. In addition, each storage and using location has developed specific emergency procedures for use with operations involving ammunition items.

6.1 Ammunition items are designed to withstand extreme environmental conditions and rough handling without being a hazard to either the user or the environment. Accidents involving ammunition items containing DU components that are not associated with a fire or the threat of a fire pose little or no radiological hazard and will be handled IAW local procedures that are based primarily upon the explosive hazard associated with the item.

6.2 The response to a fire involving ammunition is generally based upon the location of the fire, the potential threat to human life, and the explosive hazard associated with the munitions involved in the fire. In all cases, fire-fighting decisions will be made by the senior fire officer present.

6.3 Fires involving ammunition items containing DU components have a dual hazard. Of primary concern is the explosive hazard associated with the munitions. The other hazard is the potential radiation hazard associated with oxidized DU and is discussed here. When DU ammunition items become involved in a fire, a very small portion of the DU may become aerosolized and migrate with the smoke plume. The hazard of this aerosolized DU is considered small. The majority of the DU involved in a fire remains at the scene. This DU can pose an external radiation hazard if it remains in contact with the skin for an extended period of time. The DU remaining in the vicinity of the fire has been analyzed and has been found to be highly non-respirable and highly non-soluble in lung fluid. The small portion of this DU that is respirable can be an internal radiation hazard through inhalation if it is suspended in the air. Suspension could occur due to wind, explosion, or the activity of recovery crews. Because the DU which remains at the scene of the fire is highly non-soluble in lung fluid, the primary internal hazard of this DU is not chemical toxicity, but is the radiation exposure to the lung.

6.4 Historically, the occurrence of fires or explosions involving finished ammunition items for all services is rare. Burn tests have been conducted by both the Army and Air Force on DU ammunition items. These have shown that only small quantities of DU are released into the environment if a fire should involve ammunition items containing DU components. The extreme density of DU tends to result in its being deposited in the immediate area of the fire.

6.5 Fires aboard ocean-going vessels are generally fought to the maximum extent possible by all available personnel. Land-based fires involving munitions with a mass detonation, fragmentation, or mass fire hazard are not fought on a routine basis. For these types of fires, the area is generally evacuated, and attempts are made to fight incipient fires that are generated by the main fire. Fires involving munitions with a moderate fire hazard are generally fought. Additionally, fires posing a serious threat to human life may also be fought.

6.6 Fire-fighting personnel should, whenever possible, wear self-contained breathing apparatus if they are required to enter the smoke area. Although the smoke plume poses a small radiation hazard, personnel downwind of a fire involving DU ammunition should be evacuated mostly due to the possible presence of other non-radiological products in the smoke.

7. Decontamination: Cleanup of an accident site will be conducted based upon both the explosive hazards and the radiological hazards associated with the material involved. Consideration will also be given to the heavy metal toxic hazards of DU. As a minimum, an accident site will be cleaned to the extent that radiological contamination from licensed material will be less than, or equal to, the following levels:

a. Soil: 35 pCi of DU/gram of soil.

b. Equipment facilities, clothing, and other surfaces:

fixed average (over no more than 1 m^2)	5,000 dpm alpha/100 cm^2
maximum (over no more than 100 cm^2)	15,000 dpm alpha/100 cm^2
removable	1,000 dpm alpha/100 cm^2

7.1 In all cases, radiological cleanup will be to levels that are ALARA.

8. Reporting: Accidents and incidents involving ammunition items containing DU components will be reported IAW Army procedures to the local RPO. The local RPO will report any accident or incident to the license RPO. The license RPO will report accidents and incidents to the NRC as required. Reports to the NRC will be made to the NRC regional office serving the license RPO regardless of the location of the accident or incident.

8.1 The following types of accidents and incidents will be reported as expeditiously as possible through the Army accident reporting system to the local RPO and license RPO:

a. Theft or loss of control of ammunition items containing DU components.

b. Functioning of ammunition items containing DU components.

c. Fires, explosions, or accidents involving storage structures, transport vehicles, or Army weapon systems that contain DU ammunition where the ammunition items are or could be damaged.

d. Accidents or incidents that damage or expose the DU components to the environment, or release DU to the environment.

8.2 Initial notification for the above types of accidents and incidents will be made telephonically or by priority message with a written followup report. When required, the license RPO will contact the NRC. Followup reports will be submitted to the NRC as the situation requires.

8.3 Unless specifically directed otherwise, only unclassified information will be transmitted to the NRC.

Supplement 5, Enclosure 1
(Reference: NRC Form 313, Block 10)

EXAMPLES OF INFORMATION AND WARNINGS

1. As referenced in supplement 5, page 5-1, paragraph 1.1, the following serve as examples of the type of safety information and user warnings included in various Army publications:

The M829A1 is a full-service round which may only be fired during war emergency. All peace-time firings are prohibited except at locations having a NRC license.

Loss or unauthorized firing of the M829A1 must be reported to the HQ, IOC, RPO.

Projectiles are not to be disposed of by burning or detonation.

Depleted uranium ammunition must be grasped by the sabot -- not the penetrator.

The penetrator should not be banged, used as a resting point, or stepped upon.

Depleted uranium is a low-level radioactive material. There is no external radiation hazard from normal handling and on-board stowage of depleted uranium (tank) cartridges.

The DU (tank ammunition) is encapsulated within the cartridge and poses no external or internal radiation hazard as long as the round remains intact. If extensive corrosion occurs or rounds are involved in a fire, radiation contamination can result. Care should be taken to prevent inhalation or ingestion of the depleted uranium contamination. The procedures in TB 9-1300-278 should be followed.

When handling depleted uranium ammunition, wear gloves. If corrosion product is found on the round contact your local RPO.

Regardless if gloves are worn or not, wash your hands after handling DU ammunition.

Supplement 6 (Reference: NRC Form 313, Block 11)

WASTE MANAGEMENT

1. Most of the activities carried out under the terms of this license will not generate radioactive waste materials. A very small amount will be generated when the material used to wipe DU ammunition is disposed. This essentially amounts to the used wipes themselves, as well as disposable gloves. Although render-safe operations are extremely infrequent, they could also generate components to be disposed as low-level radioactive waste.

2. Headquarters, U.S. Army Industrial Operations Command, is the central manager for disposal of all radiological waste materials generated by the joint services and other Federal agencies. Radioactive waste generated under the license issued for this application will be disposed IAW Army regulations, and current NRC and DOT regulations. Headquarters, U.S. Army Industrial Operations Command, issues complete instructions to all users on proper packaging and marking of shipments of radioactive waste. Headquarters, U.S. Army Industrial Operations Command, also conducts on-site audits of radioactive waste shipments to ensure full compliance with the NRC, the DOT, and burial-site criteria.

Appendix A

Record of Environmental Consideration

RECORD OF ENVIRONMENTAL CONSIDERATION

PROJECT TITLE: Renewal of Nuclear Regulatory Commission License Number SUC-1380.

BRIEF DESCRIPTION: Renewal of license SUC-1380 is required for the continued possession of Depleted Uranium components used in ammunition.

ANTICIPATED DATE AND/OR DURATION OF PROPOSED ACTION: Duration is November 1995 to November 2000.

REASON FOR USING RECORD OF ENVIRONMENTAL CONSIDERATION:

Is categorically excluded under the provisions of CX A-29, of AR 200-2, Environmental Effects of Army Actions, Appendix A, December 23, 1988, (and no extraordinary circumstances exist as defined in AR 200-2, paragraph 4-2) because the issuance of this license permits use of Department of Army property by Department of Defense personnel and is predicated upon compliance with the NEPA.

Signed for [signature] Date 16 AUG 1995

STEPHEN R. MARLEY
Chief, Radioactive Waste Disposal Division

DNK 9/15/95

Signed Robert J. Radkiewicz Date 25 Sep 95

HQ, IOC, Environmental Coordinator

DAD 9/20 FK

AMSIO-DMW (385-11e) 16 AUG 1995

MEMORANDUM FOR AMSIO-EQ

SUBJECT: Record of Environmental Consideration for Nuclear Regulatory Commission (NRC) License Number SUC-1380

1. Reference NRC license number SUC-1380, Possession of Depleted Uranium as Cartridge Penetrators, dated 1988.

2. The referenced license is due for renewal by 30 October 1995.

3. The depleted uranium ammunition authorized by this license is stored at several Army installations. This ammunition is authorized to be involved in the following typical operations: storage, inspection, transportation, and minor maintenance. No firing, disassembly, detonation, burning, or burial is authorized.

4. Request concurrence of your office on the subject Record of Environmental Consideration so that the renewal process may proceed.

5. The POC is Mr. Kelly Crooks or Mr. Gary Buckrop, AMSIO-DMW, extension 20338 or 22969 respectively, E-mail address kcrooks or gbuckrop respectively.

Encl

LARRY W. MCNAMARA
FOR STEPHEN R. MAPLEY
Chief, Radioactive Waste
Disposal Division