

40-8775

NRC FORM 313  
(1-84)  
10 CFR 30, 32, 33, 34,  
35 and 40

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

### APPLICATION FOR MATERIAL LICENSE

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

**FEDERAL AGENCIES FILE APPLICATIONS WITH:**

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

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

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

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

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

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

**IF YOU ARE LOCATED IN:**

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

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

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

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

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

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

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

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

- A. NEW LICENSE
- B. AMENDMENT TO LICENSE NUMBER SUB 1395
- C. RENEWAL OF LICENSE NUMBER \_\_\_\_\_

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

Day & Zimmermann, Inc.  
Kansas Division  
Kansas Army Ammunition Plant  
Parsons, Kansas 67357

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

Kansas Army Ammunition Plant  
Parsons, Kansas 67357

**4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION**

David T. Emery, Radiological Protection Officer

**TELEPHONE NUMBER**

316/421-7575

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

FEE CATEGORY 2G AMOUNT ENCLOSED \$ 120.00

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

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

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

SIGNATURE - CERTIFYING OFFICER <i>David T. Emery</i>	TYPED/PRINTED NAME David T. Emery	TITLE Radiological Protection Officer	DATE 9-29-88
---	--------------------------------------	--	-----------------

<b>14. ANNUAL RECEIPTS</b>		<b>14. VOLUNTARY ECONOMIC DATA</b>	
<input type="checkbox"/> <\$250K	<input type="checkbox"/> \$1M-3.5M	b. NUMBER OF EMPLOYEES (Total for entire facility excluding outside contractors)	d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION (Dollar and/or staff hours) ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? (NRC regulations permit it to protect confidential commercial or financial—proprietary—information furnished to the agency in confidence)
<input type="checkbox"/> \$250K-500K	<input type="checkbox"/> \$3.5M-7M		
<input type="checkbox"/> \$500K-750K	<input type="checkbox"/> \$7M-10M		
<input type="checkbox"/> \$750K-1M	<input type="checkbox"/> >\$10M		
		c. NUMBER OF BEDS	<input type="checkbox"/> YES <input type="checkbox"/> NO

**FOR NRC USE ONLY**

TYPE OF FEE <i>Amend Oct. 1-IV</i>	FEE LOG <i>26</i>	FEE CATEGORY <i>2G</i>	COMMENTS  8910180269 881130 REG4 LIC40 SUB-1395 PDR	APPROVED BY <i>Mr. Kress</i>
AMOUNT RECEIVED <i>\$120</i>	CHECK NUMBER <i>07011263</i>			DATE <i>10/31/88</i>

PRIVACY ACT STATEMENT ON THE REVERSE

462215

Application For Material License

Items 5 through 11

Item No. 5

Solid 99.25% Depleted Uranium  
Alloy .75% Titarium

Maximum amount at any one time  
2,267,962 kilograms --> 5,000,000 lbs.

Element and Mass Number	Chemical and Physical Form	Maximum Amount to be Possessed at Any One Time (Kilograms)
Depleted Uranium U-238	Solid Alloy 99.25% Depleted Uranium .75% Titarium	2,267,962
	Alloy will be in form of machined bolts 30 Kg. each or less	

Item No. 6

A covering will be assembled around the Depleted Uranium Bolt.  
The final assembly will be a kinetic energy round.

Item No. 7

RADIATION TRAINING - DAVID T. EMERY, RPO

1. Principles and Practices of Radiation Protection

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	1 1/2 years	Yes	
Radiological Safety Course Fort McClellan, Alabama	15 days		Yes
Radiological Protection Program Management Course	4 days		Yes
Physical Chemistry Kansas University	1 semester		Yes

2. Radioactivity Measurement Standardization and Monitoring Techniques

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	1 1/2 years	Yes	
Radiological Safety I Fundamentals	Correspondence Course		Yes
Radiological Safety Course Fort McClellan, Alabama	15 days		Yes
Environmental Radiation Monitoring Course Ft. Belvoir, Virginia	4 days		Yes
Physical Chemistry Kansas University	1 semester		Yes

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

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	1 1/2 years	Yes	

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Radiological Safety I Fundamentals	Correspondence Course		Yes
Radiological Safety Course Fort McClellan, Alabama	15 days		Yes
Environmental Radiation Monitoring Course Ft. Belvoir, Virginia	4 days		Yes
Mathematics Lafayette Community College	2 semesters		Yes
Mathematics Kansas University	2 semesters		Yes
Physics Lafayette Community College	1 semester		Yes
Physics Kansas University	1 semester		Yes
Physical Chemistry Kansas University	1 semester		Yes

4. Biological Effects of Radiation

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	4 years	Yes	
Radiological Safety I Fundamentals	Correspondence Course		Yes
Radiological Safety Course Fort McClellan, Alabama	15 days		Yes

RADIATION TRAINING - LARRY L. WETHERELL, ALTERNATE RPO

1. Principles and Practices of Radiation Protection

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	19 Years	Yes	
Radiation Safety USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	30 Days		Yes
Radiac Calibrator Custodian Course USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	5 Days		Yes
Civil Defense Radiological Training Civil Defense Office Joplin, MO	2 Years		Yes
Radiation Monitoring Kansas State Office of Civil Defense Kansas AAP Parsons, KS	5 Days		Yes
Battelle Radiation & Instrumentation Course Parsons, Kansas	4 Days		Yes

2. Radioactivity Measurement Standardization & Monitoring Techniques

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	19 Years	Yes	
Civil Defense Radiological Training Civil Defense Office Joplin, MO	2 Years		Yes
School of Radiology St. John's Hospital Joplin, MO	2 Years		Yes

462215

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Radiation Monitoring Kansas State Office of Civil Defense Kansas AAP Parsons, KS	5 Days		Yes
Radiation Safety USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	30 Days		Yes
Radiac Calibrator Custodian Course USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD			
Battelle Radiation & Instrumentation Course Kansas AAP Parsons, KS	4 Days		Yes

3. Mathematics & Calculations Basic to the Use & Measurement of Radioactivity

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	19 Years	Yes	
Radiation Safety USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	30 Days		Yes
Battelle Radiation & Instrumentation Course Kansas AAP Parsons, KS	4 Days		Yes
Civil Defense Radiological Training Civil Defense Office Kansas AAP Parsons, KS	5 Days		Yes
Radiac Calibrator Custodian Course USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	5 Days		Yes

4. Biological Effects of Radiation

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	19 Years	Yes	
Radiation Safety USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	30 Days		Yes
Battelle Radiation & Instrumentation Course	4 Days		Yes
Civil Defense Radiological Training Civil Defense Office Joplin, MO	2 Years		Yes
School of Radiology St. John's Hospital Joplin, MO	2 Years		Yes
Radiological Monitoring Kansas State Office of Civil Defense Kansas AAP Parsons, KS	5 Days		Yes
Radiac Calibrator Custodian Course USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	5 Days		Yes

Item No. 8

Before individuals are allowed to handle any source Material/Depleted Uranium, they will receive training as outlined below:

- I. Depleted Uranium
  - A) Where Depleted Uranium comes from
    - 1. Naturally occurring uranium
    - 2. Refining uranium
  - B) Radiation Hazards of Depleted Uranium
  - C) Chemical Toxicity Hazards of Depleted Uranium
- II. Protection from Radiation Hazards
  - A) Distance
  - B) Time
  - C) Shielding
- III. ALARA
  - A) Definition of ALARA
    - 1. Example of ALARA
    - 2. KAAP's ALARA Program
  - B) NRC Radiation Worker Limits for Exposure
- IV. Protective Gear/Recording Devices
  - A) Protective Gear
    - 1. Gloves
    - 2. Glasses
    - 3. Coveralls
  - B) Thermo Luminescent Dosimeters (TLD)
    - 1. How TLD Badges Work
    - 2. Where TLD Badges Should Be Worn
- V. Employee Rights
  - A) Right to Review Exposure Records
  - B) Right to Review Source Material Licensee
  - C) Right to Contact NRC
  - D) Right to Review CFR 10-19 & 20
  - E) Form NRC-3
- VI. Employee Responsibilities
  - A) Follow SOP
  - B) Report Unsafe Conditions



VII. Emergency Procedures

- A) Fires
- B) Weather (Tornado)

VIII. Handling of Depleted Uranium Bolts at KAAP

- A) Protective Gear to be Worn
- B) Assembly of the Kinetic Energy Round
- C) Bioassay Tests - Why

Items I - VIII will be covered approximately one hour per each item in the initial training session. Yearly refresher training will cover the same items but will last approximately thirty minutes per each item.

All personnel working with Depleted Uranium will take the training. A written test will be given to all participants of the training session to check for comprehension. The tests will be signed by the participants and kept as legal records that training was provided. A sample test is attached.

David Emery, Radiation Protection Officer, is the individual responsible for conducting the training. Mr. Emery's qualifications are listed in Item No. 7.

Item No. 9

Because no chemical, physical, or metallurgical operations will be performed on the source material, Item No. 9 is not required.

Item No. 10

Because no chemical, physical or metallurgical operations will be performed on the source material, Item No. 10 is not required.

Item No. 11

The only source material wastes expected from KAAP's loading of the Kinetic Energy Round are Depleted Uranium Bolts, broken during shipment. Because of the high strength of the Depleted Uranium Bolts, a maximum of two broken bolts per month is the most expected source material waste.

All incoming shipments of Depleted Uranium bolts will be surveyed for broken bolts and any contamination. Broken Depleted Uranium Bolts will be repackaged according to CFR 49 & CFR 10 regulations and sent back to the manufacturer of the bolts.

Depleted Uranium waste which cannot be immediately shipped out will be stored in secured igloos at Kansas Army Ammunition Plant.

Depleted Uranium waste generated at KAAP will be disposed of through AMCCOM's program which handles all Department of Defense Wastes. At present, AMCCOM has a contract with Chem Nuclear System, Inc., South Carolina License DHEC #287-04.

SAMPLE RADIATION TEST

Name \_\_\_\_\_

Badge \_\_\_\_\_

Date \_\_\_\_\_

- 1) What does ALARA stand for? \_\_\_\_\_  
\_\_\_\_\_
- 2) When assembling the kinetic energy round, the following should be worn
  - a) gloves
  - b) face shields
  - c) gloves & coveralls
  - d) gloves, coveralls, and safety glasses
- 3) Whole body TLD Badges should be worn
  - a) on the belt
  - b) in between the waist and neck on the outside of coveralls
  - c) under the coveralls
  - d) on the arm
- 4) Employees have the right to
  - a) review the licensee
  - b) review the CFR 10-19 & 20
  - c) review their exposure records
  - d) all of the above
- 5) Depleted Uranium is a health hazard due to
  - a) radiation
  - b) chemical toxicity
  - c) poisonous gaseous
  - d) a and c
  - e) a and b
- 6) Employees are responsible for
  - a) reporting unsafe conditions
  - b) following the SOP
  - c) wearing personnel protective gear
  - d) all of the above

- 7) The three major ways of avoiding radiation of all types are:
- a) lowering the time spent near a radioactive source
  - b) shielding the source
  - c) \_\_\_\_\_ from the source
- 8) The installation Radiation Protection Officer is:
- a) Carl Wilson
  - b) Ralph Knapp
  - c) Ronald Reagan
  - d) David Emery
- 9) Depleted Uranium gives off the following types of radiation:
- a) Alpha and Beta
  - b) Alpha and Gamma
  - c) Gamma and Beta
  - d) Alpha
- 10) The maximum yearly whole body dose per CFR 10 Part 20 is
- a) 5 REM
  - b) 50 Milirem
  - c) 50 REM
  - d) 5 Milirem

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

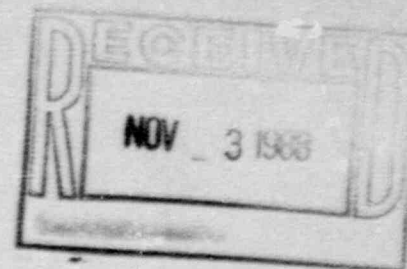
Item No. 8  
Attachment 1  
Page 2 of 2

462215

(FOR LFMS USE)  
INFORMATION FROM LTS

BETWEEN:  
LICENSE FEE MANAGEMENT BRANCH, ARM  
AND  
REGIONAL LICENSING SECTIONS

PROGRAM CODE: 11300  
STATUS CODE: 0  
FEE CATEGORY: 2G  
EXP. DATE: 19921231  
FEE COMMENTS:



LICENSE FEE TRANSMITTAL

A. REGION IV

1. APPLICATION ATTACHED  
APPLICANT/LICENSEE: DAY & ZIMMERMAN, INC.  
RECEIVED DATE: 881024  
DOCKET NO: 4008775  
CONTROL NO.: 462215  
LICENSE NO.: SU3-1395  
ACTION TYPE: AMENDMENT

2. FEE ATTACHED  
AMOUNT: \$120-  
CHECK NO.: 011-263-9

3. COMMENTS

SIGNED Joe A. Marshall  
DATE 10/24/88

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED 1.01)

1. FEE CATEGORY AND AMOUNT: 2G (\$120)

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:  
AMENDMENT         
RENEWAL         
LICENSE       

3. OTHER       

SIGNED W. P. Puzan  
DATE 10/31/88

PARSONS  
TELEX  
43-6408  
TELEPHONE  
316-421-7400

HOME OFFICE  
DAY & ZIMMERMANN, INC.  
1818 MARKET STREET  
PHILADELPHIA, PA. 19103  
215-299-8000



# DAY & ZIMMERMANN, INC.

KANSAS DIVISION

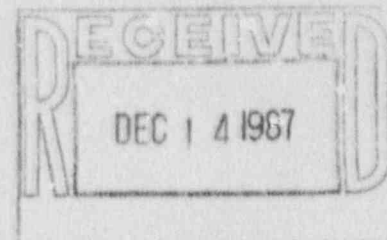
PARSONS, KANSAS 67357-9106

December 10, 1987

FILE NO. EM-8502/PIB/DTE

*ms-16  
T1*

Nuclear Regulatory Commission, Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76011



Attention: Charles L. Cain, Chief  
Nuclear Materials Licensing Section

Dear Sir:

Subject: Request for Renewal of Source Material License No.  
SUB-1395

Attached are two copies of Day & Zimmermann, Inc., Kansas  
Division's request for renewal of Source Material License No.  
SUB-1395; Mail Control Number 461024.

If any questions arise, please feel free to contact  
David Emery, Installation Radiation Protection Officer,  
(316) 421-7575.

Very truly yours,

DAY & ZIMMERMANN, INC.

*Carl L. Wilson*  
CARL L. WILSON  
Plant Manager

*SWK*  
CLW/SWK/cb

Enclosures  
a/s

Copy sent to DCS

*ms-16*

*461024*

RECEIVED  
DEC 14 1987  
U.S. NUCLEAR REGULATORY COMMISSION  
APPROVED BY ORO  
700-120  
RSD/6-5-31-87

NRC FORM 313  
11-84  
10 CFR 30, 32, 33, 34,  
35 and 40

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<p><b>FEDERAL AGENCIES FILE APPLICATIONS WITH:</b></p> <p>U.S. NUCLEAR REGULATORY COMMISSION DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS WASHINGTON, DC 20555</p> <p><b>ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:</b></p> <p><b>CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MA, NE, MARYLAND, MASSACHUSETTS, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:</b></p> <p>U.S. NUCLEAR REGULATORY COMMISSION, REGION I NUCLEAR MATERIAL SECTION B 631 PARK AVENUE KING OF PRUSSIA, PA 19406</p> <p><b>ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:</b></p> <p>U.S. NUCLEAR REGULATORY COMMISSION, REGION I MATERIAL RADIATION PROTECTION SECTION 101 MARIETTA STREET, SUITE 2900 ATLANTA, GA 30323</p>	<p><b>IF YOU ARE LOCATED IN:</b></p> <p><b>ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:</b></p> <p>U.S. NUCLEAR REGULATORY COMMISSION, REGION III MATERIALS LICENSING SECTION 799 ROOSEVELT ROAD GLEN ELLYN, IL 60137</p> <p><b>ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:</b></p> <p>U.S. NUCLEAR REGULATORY COMMISSION, REGION IV MATERIAL RADIATION PROTECTION SECTION 611 RYAN PLAZA DRIVE, SUITE 1000 ARLINGTON, TX 76011</p> <p><b>ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:</b></p> <p>U.S. NUCLEAR REGULATORY COMMISSION, REGION V MATERIAL RADIATION PROTECTION SECTION 1450 MARIA LANE, SUITE 210 WALNUT CREEK, CA 94596</p>
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PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

<p>1. THIS IS AN APPLICATION FOR (Check appropriate item)</p> <p><input type="checkbox"/> A. NEW LICENSE</p> <p><input type="checkbox"/> B. AMENDMENT TO LICENSE NUMBER _____</p> <p><input checked="" type="checkbox"/> C. RENEWAL OF LICENSE NUMBER <u>SUB 1395</u></p>	<p>2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip Code)</p> <p>Day &amp; Zimmermann, Inc. Kansas Division Kansas Army Ammunition Plant Parsons, Kansas 67357</p>
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3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Kansas Army Ammunition Plant  
Parsons, Kansas 67357

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION	TELEPHONE NUMBER
David T. Emery, Radiation Protection Officer (RPO)	316-421-7575

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.

<p>5. RADIOACTIVE MATERIAL</p> <p>a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.</p>	<p>6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.</p>
<p>7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.</p>	<p>8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.</p>
<p>9. FACILITIES AND EQUIPMENT.</p>	<p>10. RADIATION SAFETY PROGRAM.</p>
<p>11. WASTE MANAGEMENT.</p>	<p>12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)</p> <p>FEE CATEGORY <u>2 G</u> AMOUNT ENCLOSED \$ <u>Already Paid</u></p>

13. CERTIFICATION (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF. WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE - CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
<i>David T. Emery</i> 12-9-87	David T. Emery	Radiological Protection Officer	12-9-87

14. ANNUAL RECEIPTS		14. VOLUNTARY ECONOMIC DATA	
<input type="checkbox"/> <\$250K	<input type="checkbox"/> \$1M-3.5M	b. NUMBER OF EMPLOYEES (Total for entire facility excluding outside contractors)	9. WOULD YOU BE WILLING TO FURNISH COST INFORMATION (Daily and/or staff hours) ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? (NRC regulations permit it to protect confidential commercial or financial - proprietary - information furnished to the agency in confidence)
<input type="checkbox"/> \$250K-500K	<input type="checkbox"/> \$3.5M-7M	c. NUMBER OF BEDS	
<input type="checkbox"/> \$500K-750K	<input type="checkbox"/> \$7M-10M		
<input type="checkbox"/> \$750K-1M	<input type="checkbox"/> >\$10M	<input type="checkbox"/> YES <input type="checkbox"/> NO	

FOR NRC USE ONLY			
TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS
AMOUNT RECEIVED	CHECK NUMBER	APPROVED BY	
		DATE	

PRIVACY ACT STATEMENT ON THE REVERSE

Copy sent to DCS

461024

## PRIVACY ACT STATEMENT

Pursuant to 5 U.S.C. 552a(e)(3), enacted into law by section 3 of the Privacy Act of 1974 (Public Law 93-579), the following statement is furnished to individuals who supply information to the Nuclear Regulatory Commission on NRC Form 313. This information is maintained in a system of records designated as NRC 3 and described at 40 Federal Register 45334 (October 1, 1975).

1. **AUTHORITY:** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).
2. **PRINCIPAL PURPOSE(S):** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 CFR Parts 30, 32, 33, 34, 35 and 40 to determine whether the application meets the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, for the issuance of a radioactive material license or amendment thereof.
3. **ROUTINE USES:** The information may be (a) provided to State health departments for their information and use; and (b) provided to Federal, State, and local health officials and other persons in the event of incident or exposure, for their information, investigation, and protection of the public health and safety. The information may also be disclosed to appropriate Federal, State, and local agencies in the event that the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding. In addition, this information may be transferred to an appropriate Federal, State, or local agency to the extent relevant and necessary for an NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you.
4. **WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION:** Disclosure of the requested information is voluntary. If the requested information is not furnished, however, the application for radioactive material license, or amendment thereof, will not be processed. A request that information be held from public inspection must be in accordance with the provisions of 10 CFR 2.790. Withholding from public inspection shall not affect the right, if any, of persons properly and directly concerned need to inspect the document.
5. **SYSTEM MANAGER(S) AND ADDRESS:** U.S. Nuclear Regulatory Commission  
Director, Division of Fuel Cycle and Material Safety  
Office of Nuclear Material Safety and Safeguards  
Washington, D.C. 20555



Application For Material License

Items 5 through 11

Item No. 5

Solid 99.25% Depleted Uranium  
Alloy .75% Titarium

Maximum amount at any one time  
2,267,962 kilograms --> 5,000,000 lbs.

Element and Mass Number	Chemical and Physical Form	Maximum Amount to be Possessed at Any One Time (Kilograms)
Depleted Uranium U-238	Solid Alloy 99.25% Depleted Uranium .75% Titarium	2,267,962
	Alloy will be in form of machined bolts 3.99+ .02 Kg each	

Item No. 6

Fins and a sobolt covering will be assembled around the Depleted Uranium Bolt. The final assembly will be a kinetic energy antiarmor round (120mm Tank Munition).

Item No. 7

RADIATION TRAINING - DAVID T. EMERY, RPO

1. Principles and Practices of Radiation Protection

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	1 1/2 years	Yes	
Radiological Safety Course Fort McClellan, Alabama	15 days		Yes
Radiological Protection Program Management Course	4 days		Yes
Physical Chemistry Kansas University	1 semester		Yes

2. Radioactivity Measurement Standardization and Monitoring Techniques

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	1 1/2 years	Yes	
Radiological Safety I Fundamentals	Correspondence Course		Yes
Radiological Safety Course Fort McClellan, Alabama	15 days		Yes
Environmental Radiation Monitoring Course Ft. Belvoir, Virginia	4 days		Yes
Physical Chemistry Kansas University	1 semester		Yes

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

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	1 1/2 years	Yes	

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Radiological Safety I Fundamentals	Correspondence Course		Yes
Radiological Safety Course Fort McClellan, Alabama	15 days		Yes
Environmental Radiation Monitoring Course Ft. Belvoir, Virginia	4 days		Yes
Mathematics Lafayette Community College	2 semesters		Yes
Mathematics Kansas University	2 semesters		Yes
Physics Lafayette Community College	1 semester		Yes
Physics Kansas University	1 semester		Yes
Physical Chemistry Kansas University	1 semester		Yes

4. Biological Effects of Radiation

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	4 years	Yes	
Radiological Safety I Fundamentals	Correspondence Course		Yes
Radiological Safety Course Fort McClellan, Alabama	15 days		Yes

RADIATION TRAINING - LARRY L. WETHERELL, ALTERNATE RPO

1. Principles and Practices of Radiation Protection

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	19 Years	Yes	
Radiation Safety USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	30 Days		Yes
Radiac Calibrator Custodian Course USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	5 Days		Yes
Civil Defense Radiological Training Civil Defense Office Joplin, MO	2 Years		Yes
Radiation Monitoring Kansas State Office of Civil Defense Kansas AAP Parsons, KS	5 Days		Yes
Battelle Radiation & Instrumentation Course Parsons, Kansas	4 Days		Yes

2. Radioactivity Measurement Standardization & Monitoring Techniques

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	19 Years	Yes	
Civil Defense Radiological Training Civil Defense Office Joplin, MO	2 Years		Yes
School of Radiology St. John's Hospital Joplin, MO	2 Years		Yes

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Radiation Monitoring Kansas State Office of Civil Defense Kansas AAP Parsons, KS	5 Days		Yes
Radiation Safety USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	30 Days		Yes
Radiac Calibrator Custodian Course USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD			
Battelle Radiation & Instrumentation Course Kansas AAP Parsons, KS	4 Days		Yes

3. Mathematics & Calculations Basic to the Use & Measurement of Radioactivity

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	19 Years	Yes	
Radiation Safety USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	30 Days		Yes
Battelle Radiation & Instrumentation Course Kansas AAP Parsons, KS	4 Days		Yes
Civil Defense Radiological Training Civil Defense Office Kansas AAP Parsons, KS	5 Days		Yes
Radiac Calibrator Custodian Course USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	5 Days		Yes

4. Biological Effects of Radiation

<u>Where Trained</u>	<u>Duration</u>	<u>On-Job</u>	<u>Formal</u>
Kansas Army Ammunition Plant	19 Years	Yes	
Radiation Safety USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	30 Days		Yes
Battelle Radiation & Instrumentation Course	4 Days		Yes
Civil Defense Radiological Training Civil Defense Office Joplin, MO	2 Years		Yes
School of Radiology St. John's Hospital Joplin, MO	2 Years		Yes
Radiological Monitoring Kansas State Office of Civil Defense Kansas AAP Parsons, KS	5 Days		Yes
Radiac Calibrator Custodian Course USAEHA Aberdeen Proving Ground Edgewood Arsenal, MD	5 Days		Yes

Item No. 8

Before individuals are allowed to handle any source Material/Depleted Uranium, they will receive training as outlined below:

I. Depleted Uranium

- A) Where Depleted Uranium comes from
  - 1. Naturally occurring uranium
  - 2. Refining uranium
- B) Radiation Hazards of Depleted Uranium
- C) Chemical Toxicity Hazards of Depleted Uranium

II. Protection from Radiation Hazards

- A) Distance
- B) Time
- C) Shielding

III. ALARA

- A) Definition of ALARA
  - 1. Example of ALARA
  - 2. KAAP's ALARA Program
- B) NRC Radiation Worker Limits for Exposure

IV. Protective Gear/Recording Devices

- A) Protective Gear
  - 1. Gloves
  - 2. Glasses
  - 3. Coveralls
- B) Thermo Luminescent Dosimeters (TLD)
  - 1. How TLD Badges Work
  - 2. Where TLD Badges Should Be Worn

V. Employee Rights

- A) Right to Review Exposure Records
- B) Right to Review Source Material Licensee
- C) Right to Contact NRC
- D) Right to Review CFR 10-19 & 20
- E) Form NRC-3

VI. Employee Responsibilities

- A) Follow SOP
- B) Report Unsafe Conditions

VII. Emergency Procedures

- A) Fires
- B) Weather (Tornado)

VIII. Handling of Depleted Uranium Bolts at KAAP

- A) Protective Gear to be Worn
- B) Assembly of the 120mm Kinetic Energy Weapon
- C) Bioassay Tests - Why

Items I - VIII will be covered approximately one hour per each item in the initial training session. Yearly refresher training will cover the same items but will last approximately thirty minutes per each item.

All personnel working with Depleted Uranium will take the training. A written test will be given to all participants of the training session to check for comprehension. The tests will be signed by the participants and kept as legal records that training was provided. A sample test is attached.

David Emery, Radiation Protection Officer, is the individual responsible for conducting the training. Mr. Emery's qualifications are listed in Item No. 7.

Item No. 9

Because no chemical, physical, or metallurgical operations will be performed on the source material, Item No. 9 is not required.

Item No. 10

Because no chemical, physical or metallurgical operations will be performed on the source material, Item No. 10 is not required.

Item No. 11

The only source material wastes expected from KAAP's loading of the 120mm Tank Round are Depleted Uranium Bolts, broken during shipment. Because of the high strength of the Depleted Uranium Bolts, a maximum of two broken bolts per month is the most expected source material waste. The two bolts per month would be less than 212 lbs. per year.

All incoming shipments of Depleted Uranium bolts will be surveyed for broken bolts and any contamination. Broken Depleted Uranium Bolts will be repackaged according to CFR 49 & CFR 10 regulations and sent back to the manufacturer of the bolts.



Depleted Uranium waste which cannot be immediately shipped out will be stored in secured igloos at Kansas Army Ammunition Plant.

Depleted Uranium waste generated at KAAP will be disposed of through AMCCOM's program which handles all Department of Defense Wastes. at present, AMCCOM has a contract with Chem Nuclear System, Inc., South Carolina License DHEC #287-04.

SAMPLE RADIATION TEST

\_\_\_\_\_  
Name

\_\_\_\_\_  
Badge

\_\_\_\_\_  
Date

- 1) What does ALARA stand for? \_\_\_\_\_  
\_\_\_\_\_
- 2) When assembling the kinetic energy round, the following should be worn
- a) gloves
  - b) face shields
  - c) gloves & coveralls
  - d) gloves, coveralls, and safety glasses
- 3) Whole body TLD Badges should be worn
- a) on the belt
  - b) in between the waist and neck on the outside of coveralls
  - c) under the coveralls
  - d) on the arm
- 4) Employees have the right to
- a) review the licensee
  - b) review the CFR 10-19 & 20
  - c) review their exposure records
  - d) all of the above
- 5) Depleted Uranium is a health hazard due to
- a) radiation
  - b) chemical toxicity
  - c) poisonous gaseous
  - d) a and c
  - e) a and b
- 6) Employees are responsible for
- a) reporting unsafe conditions
  - b) following the SOP
  - c) wearing personnel protective gear
  - d) all of the above

- 7) The three major ways of avoiding radiation of all types are:
- a) lowering the time spent near a radioactive source
  - b) shielding the source
  - c) \_\_\_\_\_ from the source
- 8) The installation Radiation Protection Officer is:
- a) Carl Wilson
  - b) Ralph Knapp
  - c) Ronald Reagan
  - d) David Emery
- 9) Depleted Uranium gives off the following types of radiation:
- a) Alpha and Beta
  - b) Alpha and Gamma
  - c) Gamma and Beta
  - d) Alpha
- 10) The maximum yearly whole body dose per CFR 10 Part 20 is
- a) 5 REM
  - b) 50 Milirem
  - c) 50 REM
  - d) 5 Milirem

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



# DAY & ZIMMERMANN, INC.

KANSAS DIVISION

PARSONS, KANSAS 67357 -9106

March 12, 1986

FILE NO EM-8502/PIB/DTE

U.S. Nuclear Regulatory Commission  
Region IV  
Material Radiation Protection Section  
611 Ryan Plaza Drive  
Suite 1000  
Arlington, Texas 78011

Dear Sir:

We respectfully request renewal of our NRC License SUB-1395. The license is for possession of the source material, Depleted Uranium, (DU). The DU is used for a Load and Pack (LAP) operation of 120mm projectile assemblies.

We have reviewed our license requirements and the only change to the original license application pertains to the Radiological Protection Officer (RPO). Enclosed are the documents reflecting that change.

As per 10 CFR 170.31 (2)(G), enclosed is a check for \$230.00 for the renewal fee.

Very truly yours,

DAY & ZIMMERMANN, INC.

CARL L. WILSON  
Plant Manager

CLW/SKC/ab

Enclosure(s)  
a/s

Log	Apr 4 1986
Remitter	Day & Zimmermann
Check No.	1230
Amount	94243-6
Fee Category	20
Type of Fee	Renewal
Date Check Rec'd.	4/29/86
Date Completed	4/29/86
By:	Kusick

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