



DEFENSE LOGISTICS AGENCY  
HEADQUARTERS  
8725 JOHN J. KINGMAN ROAD  
FORT BELVOIR, VIRGINIA 22060-6221

Br. 2

Licensing Assistance Team  
Division of Nuclear Materials Safety  
U.S. Nuclear Regulatory Commission, Region 1  
2100 Renaissance Boulevard, Suite 100  
King of Prussia, PA 19406-2713

January 13, 2020

Re: License STC-133

04000341

Subject: Request for License Renewal

REC'D 10121 20 0652

Dear Sir or Madam:

We hereby request renewal of the subject license which expires on February 28, 2020. In support of our request, we are enclosing NRC Form 313 with copies of our Occupational Radiation Protection Program, Statement of Intent, and Certification of Financial Assurance.

Storage of licensed materials will continue to be at our depot in Scotia, NY.

Should you have any additional questions regarding this request, please contact Mr. Dewey Blair at (518) 370-3347.

Sincerely

Ronnie Favors  
Administrator

617599

NMSS/RGN1 MATERIALS-002

## NRC FORM 313

## U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 01/31/2020

(01-2020)  
10 CFR 30, 32,  
33, 34, 35, 36,  
37, 39, and 40

APPLICATION FOR  
MATERIALS LICENSE

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollections.Resource@nrc.gov](mailto:Infocollections.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NE08-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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

## APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

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

## ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

## IF YOU ARE LOCATED IN:

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

## SEND APPLICATIONS TO:

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

## IF YOU ARE LOCATED IN:

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

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

## IF YOU ARE LOCATED IN:

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

## SEND APPLICATIONS TO:

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

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

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

☐ A. NEW LICENSE

☐ B. AMENDMENT TO LICENSE NUMBER

☒ C. RENEWAL OF LICENSE NUMBER

STC-133

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

Defense Logistics Agency  
Strategic Materials (DLA-SM)  
8721 John J. Kingman Rd.  
Fort Belvoir, VA 22060

## 3. ADDRESS WHERE LICENSED MATERIALS WILL BE USED OR POSSESSED

Scotia Depot  
Rt. 5 Amsterdam Rd., building 12  
Scotia, N.Y. 12302

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

Dewey Blair

BUSINESS TELEPHONE NUMBER  
518-370-3347

BUSINESS CELLULAR TELEPHONE NUMBER  
703-223-2308

BUSINESS E-MAIL ADDRESS  
[dewey.blair@dla.mil](mailto:dewey.blair@dla.mil)

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

## 5. RADIOACTIVE MATERIAL

a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

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

## 10. RADIATION SAFETY PROGRAM.

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

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

## 9. FACILITIES AND EQUIPMENT.

## 11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions\*)  
(See 10 CFR 170 and Section 170.31)

\*Amendments/Renewals that increase the scope of the existing license to a new or higher fee category will require a fee.

FEE  
CATEGORY

N/A

AMOUNT  
ENCLOSED \$

0.00

PER THE DEBT COLLECTION IMPROVEMENT ACT OF 1996 (PUBLIC LAW 104-134), YOU ARE REQUIRED TO PROVIDE YOUR TAXPAYER IDENTIFICATION NUMBER. PROVIDE THIS INFORMATION BY COMPLETING NRC FORM 531: <https://www.nrc.gov/reading-rm/doc-collections/forms/nrc531info.html>.

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

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 37, 39, AND 40, AND THAT ALL INFORMATION 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, 1949 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

Ronnie Favors, Administrator

## SIGNATURE

## DATE

6/4/20

## FOR NRC USE ONLY

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

**Attachment to NRC Form 313 – Application for Materials License, Renewal for STC-133**

Item 5: Radioactive Material:

- a. Thorium-232, Uranium-238
- b. Natural uranium and thorium mixtures as ores, concentrates, and solids
- c. 2,000,000 kilograms total

See Enclosure 1 for Certification of Financial Assurance and Enclosure 2, DLA-SM Occupational Radiation Protection Program, for recordkeeping.

Item 6: Purpose(s) for which licensed material will be used:

Storage, sampling, repackaging, and transfer as necessary for the activities of the DLA-SM Scotia Depot.

Item 7: Individual(s) responsible for the Radiation Safety Program and their training:

Dewey T. Blair

Mr. Blair has served as the Radiological Protection Officer for the Scotia Depot, Scotia, NY for Strategic Materials from 2002 to the present. His experience in handling and inspecting licensed materials began in 2002 and encompasses 14 years of experience. Specific isotopes handled were natural uranium and thorium contained in DLA-SM Source Materials. During this period, his duties included sampling, repackaging, transportation, documentation, annual radiation surveys and respiratory protection.

His formal training includes the following:

Course	School	Hours	Dates
Radiation Safety Officer	Nevada Tech. Assoc. Inc.	40	July-2002
Radiation Instrumentation & Surveys	ERS Solutions	24	April-2003
Radiation Safety Officer	ORAU	40	June-2004
Radiation Refresher Course	ORAU	24	February-2007
Radiation Refresher Course	ORAU	24	June-2014
Radiation Refresher Course	Nevada Tech. Assoc. Inc.	24	March 2019

Item 8: Training for individuals working in or frequenting restricted areas:

DLA-SM Scotia Depot Staff and Depot Security Personnel receive training commensurate with their duties and responsibilities in accordance with Section 17 of Enclosure 2, DLA-SM Occupational Radiation Protection Program.

Item 9: Facilities & Equipment:

DLA-SM Source Materials are stored in a locked and secured portion of a designated warehouse on the Scotia Depot. The depot has two alpha and gamma radiation detecting instruments, one alpha and one gamma check course, and dosimeters for each employee, as well as additional dosimeters for visitors accessing the restricted area. Personal protective equipment, including respirators, are provided to employees. See Enclosure 2, DLA-SM Occupational Radiation Protection Program.

Item 10: Radiation Safety Program:

Enclosure 2, DLA-SM Occupational Radiation Protection Program (ORPP), documents the DLA-SM radiation safety program. Documents, training, surveys, and records for the ORPP are maintained by the Occupational Radiation Protection Manager.

Item 11: Waste Management:

Shipment and disposal of radioactive waste is coordinated through the US Army Joint Munitions Command which serves as the Department of Defense Executive Agent for Low-Level Radioactive Waste. See Section 7 of Enclosure 2, DLA-SM Occupational Radiation Protection Program.

Enclosure 1

Financial Assurance



**DEFENSE LOGISTICS AGENCY  
HEADQUARTERS  
8725 JOHN J. KINGMAN ROAD  
FORT BELVOIR, VIRGINIA 22060-6221**

Licensing Assistance Team  
Division of Nuclear Materials Safety  
U.S. Nuclear Regulatory Commission, Region 1  
2100 Renaissance Boulevard, Suite 100  
King of Prussia, PA 19406-2713

January 13, 2020

Re: License STC-133

Subject: Statement of Intent

Dear Sir or Madam:

As Administrator of the DLA Strategic Materials, I exercise express authority and responsibility to request funds from the National Defense Stockpile Transaction Fund for decommissioning activities associated with operations authorized by U.S. Nuclear Regulatory Commission License No. STC-133. Statutory authority for DLA Strategic Materials to engage in decommissioning activities is found in 50 U.S.C. §98h(b)(2)G, which makes funds available for the purpose of "Performance of environmental remediation, restoration, waste management, or compliance activities at locations of the stockpile that are required under a federal law or are undertaken by the government under an administrative decision or negotiated agreement." Decommissioning activities called for under NUREG-1757 fall into this category of permissible expenditures.

Within this authority, I intend to request that funds be made available when necessary in the amount of \$700,000 to decommission the DLA Scotia depot in Scotia, NY. Only a final survey is required at DLA Depot Scotia, NY.

Sincerely

A handwritten signature in black ink, appearing to read "Ronnie Favors", is written over a horizontal line.

Ronnie Favors  
Administrator

**NONNEGOTIABLE**



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**HEADQUARTERS**  
**8725 JOHN J. KINGMAN ROAD**  
**FORT BELVOIR, VIRGINIA 22060-6221**

Licensing Assistance Team  
Division of Nuclear Materials Safety  
U.S. Nuclear Regulatory Commission, Region 1  
2100 Renaissance Boulevard, Suite 100  
King of Prussia, PA 19406-2713

January 13, 2020

Re: License STC-133

Subject: Certification of Financial Assurance

Principal: DLA Strategic Materials  
8725 John J. Kingman Road  
Fort Belvoir, VA 22060  
Location: DLA Depot Scotia, NY  
Issued to: U.S. Nuclear Regulatory Commission

Dear Sir or Madam:

I certify that DLA Strategic Materials is licensed to possess the following types of source material in a readily dispersible form licensed under 10 CFR Part 40, in the following amounts:

Type of Material	Amount of Material
Natural uranium and thorium as ores, concentrates, and solids	2,000,000 kilograms

I also certify that financial assurance in the amount of \$700,000 will be obtained for the purpose of decommissioning as prescribed by 10 CFR Part 40.

Sincerely

Ronnie Favors  
Administrator

Enclosure 2

Occupational Radiation Protection Program





# **OCCUPATIONAL RADIATION PROTECTION PROGRAM**

**Defense Logistics Agency – Strategic Materials  
(DLA-SM)**

January 2020

Hard copies of this document may not be the most current version. Refer to  
<https://www.dla.mil/HQ/Acquisition/StrategicMaterials/iamthekey/> to verify the most current version.

## PREFACE

This January 2020 revision of the Defense Logistics Agency Strategic Materials (DLA-SM) Radiation Protection Guidelines supersedes all previous publications relating to radiological protection for DLA Strategic Materials personnel and property.

It is the goal and stated policy of DLA Strategic Materials to establish appropriate and adequate procedures and controls to minimize exposure to ionizing radiation to DLA Strategic Materials employees and the general public to “As Low As Reasonably Achievable” (ALARA). Adherence to the guidance set forth in this document will maintain the protection necessary to achieve this goal and greatly minimize the biological effects of low-level radiation exposure.

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1. Purpose

The policy stated herein establishes guidelines for protection against ionizing radiation and an "Occupational Radiation Protection Program" (ORPP) for the handling and storage of licensed radioactive source materials at DLA Strategic Materials facilities.

2. Scope

These guidelines apply to all DLA Strategic Materials personnel, visitors, and contractor personnel who, by the nature of their duties, may be exposed to ionizing radiation at locations where licensed DLA-SM radioactive materials are stored.

3. Responsibility

- 3.1 The Chief, Environmental Management is responsible for the development and overall administration of the ORPP. It is the responsibility of the Radiological Safety Officer (RSO) listed on the NRC license to carry out the functional responsibilities included in these guidelines.
- 3.2 The Chief of Environmental Management is responsible for nominating an RSO and assuring that they attend the required training course(s).
- 3.3 The RSO is responsible for monitoring the effectiveness of the radiological program and extending the training program among personnel as required.
- 3.4 The Facility Manager and Depot RSO are responsible for the day to day supervision of the ORPP at their facility. They are also responsible for and will ascertain that prescribed monitoring and safety precautions are taken with respect to radioactive materials.
- 3.5 It is the responsibility of the RSO or Designated alternate to immediately notify the appropriate responsible officials (i.e., fire department, DLA-SM officials, etc) and take appropriate action in the event of an incident involving the release or potential release of radioactive materials in accordance with the Depot's Emergency Protection Plans.

4. Program Requirements

An active, closely supervised ORPP will be implemented at a high level of organization, training, and proficiency. In implementing and maintaining the ORPP, the following specific requirements will be observed:

- 4.1 The RSO will maintain current copies of this ORPP. The RSO will periodically review all plans and procedures, care for and maintain instruments, inspect records and materials in storage.
- 4.2 All personnel entering a restricted area shall first complete a DD Form 1952, "Dosimeter Application And Record Of Occupational Radiation Exposure". Mailing addresses shall be obtained for all Non-DLA-SM personnel and dosimetry results shall be forwarded to them,

annually. A permanent record on DD Form 1141, Record of Occupational Exposure to Ionizing Radiation, will be maintained for each potentially exposed person (when monitoring has been provided), by the Depot RSO. A computer generated form containing the same information as the printed DD Form 1141 is authorized; this will be referred to as the Automated Dosimetry Record (ADR).

- 4.3 Section 206 of Public Law 93-438 "Energy Reorganization Act of 1974", NRC Form 3 "Notice To Employees", "Notice of Violation" involving radiological working conditions (within two working days after receipt of the documents from the Commission and for a minimum of 5 working days or until action correcting the violation has been completed, whichever is later), and the location of the NRC license will be posted so as to be clearly visible.
- 4.4 The depot will have on hand, at a minimum, two instruments capable of detecting alpha and gamma radiation, one alpha and one gamma check source, and TLD's for each employee. A supply of TLD's shall also be maintained for use by occasional visitors at any facility that has a restricted area.
- 4.5 The RSO shall make, at a minimum, one survey per year at the depot to review, 1) records, 2) inventories of instruments, check sources and licensed materials, 3) instrument calibration, 4) dosimetry services, and 5) Emergency Protection Plans. During the survey they shall also monitor all licensed material and evaluate radiation safety procedures through observation and discussion with depot employees. Further, they shall prepare a comprehensive report detailing their annual survey and forward the same to the ORPM. The survey reports shall also: 1) Utilize a format and include a checklist; 2) contain a written evaluation of public dose compliance as noted in 10 CFR 20.1302 and 3) note the specific range of employee accumulated doses for the past year.
- 4.6 The RSO shall review and document the review of all exposure records (DD Form 1141 or ADR) annually. The RSO shall notify each person monitored of his/her accumulated dose and obtain written acknowledgements from the employees that shall be placed in the depot records annually. The notification shall be in accordance with the requirements of Title 10 CFR 19.13 and include the statement: *"This report is furnished to you under the provisions of the NRC regulation 10 CFR Part 19. You should preserve this report for further reference"*. Additionally, the depot RSO shall monitor operational activities relating to licensed radioactive materials, and maintain appropriate records of such operations.
- 4.7 The RSO shall be responsible for the coordination of shipments and paperwork, including Nuclear Regulatory Commission reporting requirements. Strict compliance with 49 CFR § 173 shipping and labeling requirements shall be observed.
- 4.8 Once each fiscal year, the RSO shall coordinate with the Depot Facility Manager to set aside a monthly safety meeting for radiation protection training. The RSO(s) shall provide the training to all personnel except the guard force and clerical staff. Upon completion of the training, the RSO shall notify the Chief, Environmental Management, in writing, of the names of all attendees at the meeting. Training of the guard force will be accomplished in the form of written instructions.
- 4.9 The Chief of Environmental Management or their designee shall audit the program by

reviewing the annual reports submitted to determine compliance with the requirements of the NRC license and the ORPP, and shall also annually review the overall licensed radiation protection program, NRC regulations, provisions of the NRC License and compliance status of the National Defense Stockpile program. The ORPM shall report any adverse findings to senior management and shall forward each annual survey to the Depot Manager to advise the status of the program at the depot.

- 4.10 The RSO shall conduct a physical inventory of all NRC licensed material (*if material is present*) once each fiscal year. This inventory shall be documented in writing and kept on file at the depot. A copy shall be forwarded to the Chief of Environmental Management. Shipments or receipts of licensed material shall be reported by the RSO directly to the Chief of Environmental Management.
- 4.11 The RSO shall establish a Decommissioning File at each open location listed on the license. The file shall contain the following records:
  - a. Documentation indicating where radioactive materials have been stored, handled, or used;
  - b. Documentation of any spills or areas found to be contaminated;
  - c. Copies of all annual surveys and surveys performed after sampling repackaging or shipping activities; and
  - d. Inventories and documentation regarding disposal, sale or shipment of radioactive commodities.

## 5. Control Measures

The greatest emphasis should be placed on engineering control measures to reduce exposures to levels "As Low As Reasonably Achievable" (ALARA).

- 5.1 Ventilation, Dust Collection, Isolation, and Facility Layout. Ventilation systems are not normally utilized during regular handling and storage of licensed material within DNSC as material is normally kept in unopened, sealed containers. However, local exhaust ventilation systems may be necessary in the rare event of a special project.

Prior to the beginning of a repackaging or decontamination project, an assessment shall be made by the RSO in conjunction with other stockpile personnel, to determine if there is a need for additional controls. Engineering controls such as, but not limited to, isolation, enclosure, exhaust ventilation and dust collection shall be used to meet the NRC exposure limit criteria.

- 5.2 Access. The layout of storage facilities shall be such that it minimizes exposure to ionizing radiation. For example, radioactive commodities shall be consolidated and isolated to limit access. Warehouses shall generally be kept locked and sealed and a log maintained to control the issuance of numbered seals. Depot access is to be controlled by perimeter fences along the site boundary and a full time security force.
- 5.3 Shielding. For materials stored inside buildings or structures, if necessary, highly dense material in

drums can serve as an effective perimeter shield. Normally, lead, concrete, or a combination of the two is used to attenuate the highly penetrative gamma rays. If shielding material is installed, special attention should be paid to such details as overlapping joints, eliminating voids or non-homogeneities in the shielding material, the need for structural support for non-load bearing material such as lead, the need to ensure proper attenuation through leaky areas in the shield, (e.g., glass windows, joints, seams, pipes, conduits, service boxes and doors). There is also a need for continuous maintenance of the shielding structure, to prevent deterioration.

- 5.4 Time. The longer a person is exposed to radiation, the greater the biological risk. It should be understood that work operations involving radioactive stockpile commodities, particularly thorium, should take into account the length of time a person is exposed to a given dose of radiation. Personal monitoring, in conjunction with radiation surveys, is necessary to ensure that workers; a) are not exposed to radiation in excess of NRC regulations and b) exposure for a particular work task is maintained ALARA
- 5.5 Distance. Distance is a practical method of reducing the amount of radiation exposure to persons conducting stockpile work operations in and around radioactive materials. The levels of radiation decline rapidly as the distance is increased between the source and the person.
- 5.6 Protective Equipment. Every effort shall be made to reduce potential radiation exposures by the methods noted above. There may be times, however, when personal protective clothing and equipment will be the primary means of personnel protection, especially for airborne radionuclide particulates. Respirators shall be chosen for use according to the DLA Strategic Materials Occupational Health Guidelines for Respiratory Protection. Such respirators shall be approved for use in atmospheres containing radionuclides by the National Institute for Occupational Safety and Health (NIOSH). The specific type of respiratory protective equipment to be used shall be based on the judgment of the RSO.

Special training is necessary for the proper usage of personal protective clothing and equipment; such training (except for the care and use of respirators) is the responsibility of the RSO. Respiratory protection training is the responsibility of Respiratory Protection Designees as noted in the DLA Strategic Materials Respiratory Protection Program

6. Precautionary Measures.

There are a number of measures that the Radiation Safety Officer and other depot personnel should be aware of at all times:

- the amount of exposure should be controlled in accordance with section 5.0 of this document;
- employee rotation (dose sharing);
- eating, drinking, smoking or chewing gum is strictly prohibited in areas containing radioactive materials;
- personal belongings such as: watches, rings, combs, etc shall not be worn while working in restricted areas;
- persons with open wounds shall not be allowed work in areas containing radioactive materials;
- if a person receives a cut or wound during a work operation involving radioactive materials, they shall immediately be removed from that area and the wound shall immediately be attended to;
- containers of licensable radioactive materials that are to be received into the Defense National Stockpile shall be thoroughly inspected for contamination and leaks prior to storage; in accordance with 10 CFR 20.1906;
- engineering controls, such as shielding, local exhaust ventilation, dust collection and isolation shall be used when and where necessary;
- handling of radioactive materials shall be carried out in a manner, which will prevent damage to the containers and reduce radiation exposure to ALARA;
- personnel shall exercise good personal hygiene habits (e.g., washing and showering thoroughly) when conducting work operations involving contact with radioactive materials;
- personnel shall wear personal protective equipment when conducting work operations where they may come into contact with airborne radioactive materials, or their gases;
- personnel shall be monitored by dose rate and contamination surveys during and after contact with licensed radioactive materials;
- radiation doses measured by personal dosimetry shall be recorded immediately after determination of the dose; and
- shipment of licensed materials shall be in accordance with all federal, state, and local regulations.



7. Waste Disposal.

Shipment of radioactive waste is performed by a Department of Defense (DoD) Broker under contract to the DoD Executive Agent for Low-Level Radioactive Waste (US Army Joint Munitions Command). The broker is responsible for packaging the items and shipping them in accordance with applicable DOT regulations. The RSO is responsible for ensuring that all work performed by the broker is performed in accordance with the ALARA principle, standard radiological health practices, and this manual.

8. Warning Signs. Labels. Markings and Placards.

8.1 General. Documents, notices, signs, or forms shall be conspicuous, and shall be replaced if defaced or otherwise rendered illegible.

8.2 Notices. Items a., b, & d. below shall be posted such that workers have access to them as they travel to/from work. The other items can be posted with a notice as to where persons entering a Radioactive Materials Area (RAM) can review them:

- a) NRC Form 3, Notice to Employees.
- b) 10 CFR Parts 19, 20, 21
- c) NRC license for DLA Strategic Materials and amendments
- d) Notice of Violation, or any other applicable infraction, involving radiological working conditions.
- e) Section 206, Energy Reorganization Act

8.3 Radioactive Material (RAM) Areas. Radioactive Material Areas shall be posted at each entrance of a building, room, or area. An area within a building may be designated a RAM area by the use of stanchions positioned such that the posting is clearly visible from each avenue of approach.

- Restricted areas where dose rates exceed 5.0 mR/hr at any point shall be posted with conspicuous signs in accordance with 10 CFR 20.1902(a).
- Any area which contains more than 1,000 microcuries of licensed material shall be posted with conspicuous signs in accordance with 10 CFR 20.1902(e).

9. Exposure Criteria and Evaluation.

There are some basic assumptions that have been derived in formulating radiation protection guidelines. They are: 1) the biological effects of low level radiation are not precisely known, 2) there is no known level of radiation below which there will be no biological effects, and 3) there is a linear relationship between biological effects and dose.

Permissible levels of radiation exposure in an occupational environment are set higher than in a non-occupational environment.

9.1 DLA Strategic Materials Exposure Criteria.

- 9.1.1 The maximum permissible occupational dose is 5.0 rems per year. The maximum permissible dose to members of the public is 100 millirem per year.
- 9.1.2 The DLA Strategic Materials maximum permissible dose rate within a controlled area shall not exceed 0.50 mR/hr. A Restricted Area shall be established where dose rates exceed 0.50 mR/hr at a distance of one foot from the material.
- 9.1.3 TLD's shall be used by ALL personnel entering a restricted area where they are likely to receive, in one year, a dose in excess of 500 mRem. The RSO will annually evaluate the need for personnel dosimetry at the depot and document the evaluation in the annual survey.
- 9.1.4 The DLA Strategic Materials maximum permissible dose rate at the perimeter fence of the storage facility shall not exceed background.
- 9.1.5 Minors shall not be permitted to enter restricted areas.
- 9.1.6 Because of the DLA Strategic Materials mission and operational structure, exposure to radiation is limited. It is, however, recognized that radiation exposure can produce damaging effects to embryos and fetuses, especially when received during certain periods of gestation. Because of this sensitivity, it is DLA Strategic Materials policy to minimize fetal exposure to radiation. DLA Strategic Materials employees who are at risk for occupational exposure and who are pregnant, or believe that they could be pregnant, are encouraged to notify their supervisor and/or Radiation Safety Officer, in writing, and to discuss the situation, risks, and possible consequences of continued exposure. All such discussions will remain confidential. All female employees likely to receive an occupational dose, and all supervisors at NRC licensed sites, shall be given a copy of NRC Regulatory Guide 8.13, "Instructions Concerning Prenatal Radiation Exposure" and instructed in the potential risks of exposure to ionizing radiation during pregnancy.

Upon receipt of a written notification containing the estimated date of conception, pregnant employees shall be provided with an alternate work assignment comparable to their current position that will eliminate occupational exposure to radiation during the remainder of their pregnancy.

Declared pregnant workers (DPW) will not be exposed to more than 100 millirem during the gestation period after they have declared their pregnancy in writing to their supervisor. Supervisors are responsible for informing the RSO of all such declarations as soon as possible, providing a copy of the declaration to the RSO and taking appropriate action to limit the worker's potential exposure for the remainder of the pregnancy. If the worker has already received 100 millirem from the time of conception to the time of declaration, contact the ORPM for additional guidance. DLA Strategic Materials employees unable to continue their regular duties because of this limitation will be provided with an alternative work assignment, free from occupational radiation exposure, that will have no adverse effect on their rate of pay, benefits or promotion.

10. Standards and Regulations.

Applicable standards, regulations and guidelines shall be fully understood and complied with when handling, storing, or, shipping licensed radioactive materials in the Defense National Stockpile. A list of these standards can be found in Appendix B.

11. Surveys

Annual radiological surveys shall be conducted by an RSO at each *open facility* listed on the license. They shall include, but not be limited to; a physical survey of the material and equipment, review of records, review of training, and interviews of the Distribution Facility Manager.

As a minimum the survey shall include the requirements outlined in 10 CFR Part 20. 1501. Surveys shall also include measurements of dose rates at contact with the container (where practical), at one foot distance, at the perimeter of any restricted area, and at the depot perimeter if the depot contains a restricted area. (NOTE: In lieu of radiological measurements at the Depot perimeter, measurements may be taken within the controlled area at a point where levels of radiation do not exceed background.) The RSO shall also document the location of licensed materials in the depot and assure that an inventory was conducted within the past 365 days.

12. Decontamination & Decommissioning

When closing out a facility or "decommissioning" a specific storage building, area, material or equipment, residual radioactive contamination must be addressed. The procedures, level or limits established by the Nuclear Regulatory Commission (NRC) in their document NUREG 1757 "Consolidated Decommissioning Guidance: Decommissioning Process for Materials Licensees" shall be used. Specific procedures shall be developed by the Chief of Environmental Management. Decontamination actions shall be documented in writing.

13. Instrumentation

13.1 Monitoring instruments shall have sufficient sensitivity, precision, and dynamic range to accommodate the type of radiation being measured.

13.2 The monitoring level on the instruments should be set at the level of radiation expected to be encountered. Review of previous survey results in the area will provide the expected levels.

13.3 Annual calibration of all monitoring instruments is mandatory. Calibration must be performed by a laboratory possessing a valid NRC or Agreement State license. When the instruments are received from the calibration facility, establish a baseline for future operational checks by taking a reading with the appropriate check source. Place a written record of the date, reading, instrument and source serial numbers in the depot calibration file.

13.4 TLD's must be obtained from, processed and evaluated by, the Department of the Army Ionizing Radiation Dosimetry Center.

14. Emergency Procedures

- 14.1 The Depot Manager will establish an Emergency Protection Plan. This plan shall be reviewed and/or updated annually. The revisions must be reviewed by the RSO.
- 14.2 Prior arrangements should be established with local police and fire departments, hospitals, in-house and outside emergency squads and other medical facilities. Evacuation routes and assembly points should be designated. Documentation of meetings/contacts with outside agencies shall be maintained.

15. Medical Surveillance

A pre-employment and annual medical examination program for stockpile employees potentially exposed to hazardous and radioactive materials shall be conducted. Complete medical records for each employee shall be maintained by the servicing health unit.

16. Records

- 16.1 The Nuclear Regulatory Commission requires each licensee to keep exposure, monitoring, survey, disposal, and decontamination records. These records shall be kept indefinitely at the depots where the licensed material is stored. Copies of radiation surveys will be forwarded to the DLA Strategic Materials Headquarters.
- 16.2 The RSO for each site where licensed source material is stored will establish a Radiological Data Book containing license data, exposure data, calibration data, the DLA Strategic Materials ORPP and all other documents related to the source material at the site. Included shall be written records of quarterly exposure reviews, annual radiation exposure notifications, and initial and annual radiation safety training.

17. Training

- 17.1 Radiological officers shall be given at least 40 hours formal classroom training commensurate with their assigned duties and specific to their responsibilities within the DLA Strategic Materials ORPP. At minimum, the training shall include: the fundamentals of ionizing radiation, its characteristics, and appropriate units of measure, evaluation techniques, instrumentation, biological effects, NRC Regulations, and control measures. Refresher training shall be provided triennially. Additionally, radiological officers shall receive training in DOT Regulations.
- 17.2 All depot personnel (except clerical staff and security personnel) shall receive annual training regarding potential hazards, precautions to minimize exposure, work practices and operating procedures, personal hygiene, information contained in NRC Regulatory Guide 8.13, and use of personal protective clothing and equipment. The RSO shall develop a detailed, site specific, outline which will be kept on file at the depot. Attendance at all training sessions shall be documented and lists kept on file (See paragraph 4.8).
- 17.3 Security personnel should not encounter radiological hazards during the performance of their duties. They will be instructed to not enter the restricted area. They will be instructed to only guide emergency personnel to the restricted area and not to enter in the event of an emergency.

## APPENDIX A DEFINITIONS

## DEFINITIONS

**Absorbed dose** means the energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the rad and the gray (Gy).

**Activity** is the rate of disintegration (transformation) or decay of radioactive material. The units of activity are the curie (Ci) and the becquerel (Bq).

**Adult** means an individual 18 or more years of age.

**Airborne radioactive material** means radioactive material dispersed in the air in the form of dusts, fumes, particulate, mists, vapors, or gases.

**Airborne radioactivity area** means a room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations:

- (1) In excess of the derived air concentrations (See Appendix B, 10 CFR Part 20) or,
- (2) To such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI) or 12 DAC hours.

**ALARA** (acronym for "as low as is reasonably achievable") means making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in the relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

**Background Radiation** means radiation from cosmic sources, naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material) and global fallout as it exists in the environment from the testing of nuclear explosive devices. "Background radiation" does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

**Bioassay** (radiobioassay) means the determination of kinds, quantities or concentrations and in some cases, the locations of radioactive material in the human body, whether, by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body.

**Byproduct material means**

- (1) Any radioactive material (except special nuclear- material) yielded in, or made radioactive

by, exposure to the radiation incident to the process of producing or utilizing special nuclear material; and,

(2) The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition.

**Collective dose** is the sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation.

**Committed dose equivalent** means the dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

**Committed effective dose equivalent** is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

**Controlled area** means an area, outside a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason.

**Declared Pregnant woman** means a woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception.

**Deep-dose equivalent** (which applies to external whole-body exposure) is the dose equivalent at a tissue depth of 1 cm.

**Dose or radiation dose** is a generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent.

**Dose equivalent** means the product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert.

**Dose Rate** is a measure of dose per unit of time.

**Effective dose equivalent** is the **sum** of the products of the dose equivalent to the organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated.

**Exposure** means being exposed to ionizing radiation or to radioactive material.

**External dose** means that portion of the dose equivalent received from radiation sources outside the body.

**High radiation area** means an area accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.1 rem in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

**Individual monitoring means**

(1) The assessment of dose equivalent by the use of devices designed to be worn by an individual,

(2) The assessment of committed effective dose equivalent by bioassay (see Bioassay) or by determination of the time-weighted air concentrations to which an individual has been exposed, or

(3) The assessment of dose equivalent by the use of survey data.

**Internal dose** means that portion of the dose equivalent received from radioactive material taken into the body.

**Licensed material** means source material, special nuclear material, or byproduct material received, possessed, used, transferred or, disposed of under a general or specific license by the Commission.

**Limited quantity** means a quantity of radioactive material not exceeding the materials package limits of 49 CFR 173.423 which conforms to the requirements in 49 CFR 173.421.

**Limits** (dose limits) means the permissible upper bounds of radiation doses.

**Low specific activity (LSA) material** generally means uranium or thorium ores and their physical or chemical concentrates; a material of low activity and heavy weight as noted in 49 CFR 173.403).

**Member of the Public** means any individual except when that individual is receiving an occupational dose.

**Minor** means an individual less than 18 years of age.

**Monitoring** means the measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.

**Occupational dose** means the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation or as a member of the general public.

**Open Facility** means a facility that may or may not be storing licensed material, but is still listed as an open facility on the NRC license. The facility has not or is unable to complete the final status survey for close-out at this point in time.



**Public dose** means the dose received by a member of the public from exposure to radiation or radioactive material released by a licensee, or to any other source of radiation under the control of a licensee. It does not include occupational dose or doses received from background radiation.

**Radiation** (ionizing radiation) means alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in this program, does not include non-ionizing radiation, such as radio-or microwaves, or visible, infrared, or ultraviolet light.

**Radiation area** means an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

**Rem** is the special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor, 1 rem = 0.01 sievert (Sv)

**Restricted Area** means an area in which access is limited by the licensee for the purpose of protecting individuals against risks from exposure to radiation.

**Shallow-dose equivalent** which applies to the external exposure of the skin or an extremity is taken as the dose equivalent at a tissue depth of 0.007 centimeter averaged over an area of 1 square centimeter.

**Sievert** (Sv) is the Standard International (SI) unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor, 1 Sv = 100 rems.

**Site boundary** means that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.

**Source material means:**

(1) Uranium or thorium or any combination of uranium and thorium in any physical or chemical form; or

(2) Ores that contain, by weight, one-twentieth of 1 percent (0.05 percent), or more, of uranium, thorium, or any combination of uranium and thorium (see 40 CFR 40.4). NOTE Source material does not include special nuclear material.

**Survey** means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or

quantities of radioactive material present.

**Total Effective Dose Equivalent** (TEDE) means the sum of the deep-dose equivalent (for external exposure and the committed effective dose equivalent (for internal exposures).

**Unrestricted area** means an area, access to which is neither limited nor controlled by the licensee.

## APPENDIX B

### APPLICABLE REGULATIONS

## APPLICABLE REGULATIONS

1. Title 10, Code of Federal Regulations (Energy), parts 19, 20, 40, and 71.
2. Title 29, Code of Federal Regulations (Labor), part 1910.
3. Title 40, Code of Federal Regulations (Environment), all applicable parts.
4. Title 49, Code of Federal Regulations (Transportation), parts 171 – 189.
5. All Applicable State Rules and Requirements governing the use, storage transportation and disposal of radioactive source material.
6. DNSC Respiratory Protection Program.

## APPENDIX C

### UNITS OF RADIOLOGICAL MEASUREMENT

## UNITS OF RADIOLOGICAL MEASUREMENT

MULTIPLY # OF TO OBTAIN # OF      by      TO OBTAIN # OF  
 TO OBTAIN # OF      by      DIVIDE # OF

becquerel	$2.703 \times 10^{-11}$	curies
curies	$3.70 \times 10^{10}$	disintegrations/sec
curies	$10^3$	millicuries
curies	$10^6$	microcuries
curies	$10^{12}$	picocuries
curies	$10^{-3}$	kilocuries
curies	$3.7 \times 10^{10}$	becquerel
dis/min	$4.505 \times 10^{-10}$	millicuries
dis/min	$4.505 \times 10^{-7}$	microcuries
dis/sec	$2.703 \times 10^{-8}$	millicuries
dis/sec	$2.703 \times 10^{-5}$	microcuries
gray	100	rad
kilocuries	$10^3$	curies
microcuries	$3.7 \times 10^4$	dis/sec
microcuries	$2.2 \times 10^6$	dis/min
millicuries	$3.7 \times 10^7$	dis/sec
millicuries	$2.22 \times 10^9$	dis/min

## UNITS OF RADIOLOGICAL MEASUREMENT

MULTIPLY # OF TO OBTAIN # OF      by      TO OBTAIN # OF  
 TO OBTAIN # OF      by      DIVIDE # OF

R	$2.58 \times 10^{-4}$	C/kg of air
rads	0.01	gray
rads	0.01	J/kg
rads	100	ergs/gm
rads	$6.242 \times 10^7$	MeV/g
rem	0.01	sievert
microcuries/cm <sup>3</sup>	$2.22 \times 10^{12}$	dpm/m <sup>3</sup>
microcuries/cm <sup>3</sup>	$2.22 \times 10^9$	dpm/liter
dpm/m <sup>3</sup>	0.4505	pCi/m <sup>3</sup>
sievert	100	rem

APPENDIX D

DEFENSE NATIONAL STOCKPILE CENTER RADIOLOGICAL SAFETY OFFICER



**DEFENSE NATIONAL STOCKPILE CENTER RADIOLOGICAL SAFETY OFFICER**

**DLA-SM (DNSC) Headquarters**

8725 John J. Kingman Rd  
Suite 3229  
Ft. Belvoir, VA 22060

Dewey Blair  
Radiological Safety Officer  
DLA-SM Scotia Depot  
Route 5, Building #12  
Scotia, NY 12309

APPENDIX E  
GUIDANCE FOR DEMONSTRATING COMPLIANCE WITH PUBLIC DOSE

## Guidance for Demonstrating Compliance with Public Dose

### **Background**

The RSO is required to perform an evaluation at each depot to ensure that exposures to individual members of the public do not exceed 1.0 mSv (100 mrem) in a calendar year. The Nuclear Regulatory Commission has issued specific guidance on the methods used to perform this evaluation. The following provides guidance on performing this evaluation and the retention of records associated with the evaluation.

### **Regulatory Requirement**

10 CFR 20.1301 states,

*1) The total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 millisievert) in a year, exclusive of the dose contributions from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with §35.75, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with §20.2003, and*

*(2) The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with §35.75, does not exceed 0.002 rem (0.02 millisievert) in any one hour.*

10 CFR 20.1302 states that compliance is demonstrated by:

*(a) The licensee shall make or cause to be made, as appropriate, surveys of radiation levels in unrestricted and controlled areas and radioactive materials in effluents released to unrestricted and controlled areas to demonstrate compliance with the dose limits for individual members of the public in §20.1301.*

*(b) A licensee shall show compliance with the annual dose limit in §20.1301 by --*

*(1) Demonstrating by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit;*

A member of the public is an individual in a controlled or unrestricted area who is not receiving an Occupational Dose.

### **Compliance Methods**

The dose to a member of the public is comprised of internal and external exposure (i.e., Total Effective Dose Equivalent (TEDE)). NRC regulations require that the total effective dose equivalent (TEDE) from all exposure pathways not exceed 100 mrem per year. This exposure is comprised of equal parts of internal and external exposure (i.e., 50 mrem internal and 50 mrem

external). In order to perform the evaluation, all potential sources of external and internal radiation exposures and all locations of use, transport, and storage of radioactive material at the depot must be identified. For DLA Strategic Materials depots, we will use a combination of measurements, process knowledge, and calculations to demonstrate compliance. Since the types of radioactive material stored or handled at DLA-SM depots are solids in sealed containers, then the internal pathway can be eliminated and the total dose limit (100 mrem) can be assumed to occur through external exposure.

*Step 1: Determine the Dose In The Unrestricted Area*

Determine the location in an unrestricted area where a member of the public would receive the highest dose from licensed operations (*Unrestricted area* means an area, access to which is neither limited nor controlled by the licensee). This location is typically outside the depot perimeter fence. Determine the dose rate by reviewing the results of monitoring by perimeter surveys. Since it is DLA Strategic Materials policy to maintain the dose rate at the perimeter fence at background, the annual dose to a member of the public would be zero. This should be noted in a written discussion in the annual survey report.

*Step 2: Determine the Dose In The Controlled Area*

If members of the public are routinely present in a controlled area, locate the building(s) where they are situated and determine the dose rate by reviewing the results of monitoring. A conservative approach is to select the highest measurement and assume that the dose rate remained at that level for an entire year.

Assume that the member of the public is present at that location for 24 hours per day, 365 days per year. This provides an occupancy factor of 1. If the result of the calculation using an occupancy factor of 1 shows that the public dose limit is not exceeded, there is no need for further evaluation.

If the calculation demonstrates that the public dose limit is exceeded with an occupancy factor of 1 the following assumption may be made:

For example, the RSO knows, based upon process knowledge that workers do not work 24 hours per day, 365 days per year. To gain an estimate of a more realistic occupancy the RSO assumes 40 hours per week, 52 weeks per year. This will safeside the results because the RSO knows that, at this location, the workers do not work a full work day, every day of every week during the year.

If the result of this calculation shows that the public dose limit is exceeded then more realistic assumptions of the individuals' occupancy may be made. When this approach is used, the RSO must document the justification for the use of the reduced occupancy factor. One method would be to interview workers and supervisors.

*Step 3: Records*

The depot must maintain records (annual survey report) to demonstrate compliance with the dose

limit until the NRC terminates the license. In general the following must be included:

- The surveys or measurements used in the calculations,
- The justification of site specific occupancy factors,
- A map or diagram showing the perimeter of the storage area and the location of highest dose and
- The results of the calculations must be maintained

### *Example Calculations*

Calculations for compliance are performed as follows. The calculations shown assume a maximum measured dose rate of 0.030 mrem/hr.

- *Occupancy Factor*

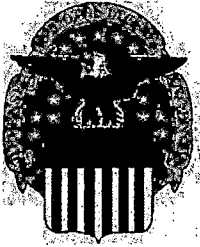
$$(40 \text{ hr/wk})(52 \text{ wks/yr}) = 2,080 \text{ hrs/yr}$$

- *Maximum Dose to Member of Public*

$$(0.030 \text{ mrem/hr})(2,080 \text{ hr/yr}) = \mathbf{62.4 \text{ mrem}}$$

APPENDIX F  
ANNUAL SURVEY REPORT TEMPLATE

DEFENSE LOGISTICS AGENCY STRATEGIC MATERIALS



# **OCCUPATIONAL RADIATION PROTECTION PROGRAM ANNUAL REVIEW**

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Scotia Depot

[DATE]

Prepared by

Directorate of Materials Management  
DLA/SM-E

# OCCUPATIONAL RADIATION PROTECTION PROGRAM SURVEY

## Scotia DEPOT

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### EXECUTIVE SUMMARY

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On \_\_\_\_, \_\_\_\_ Radiological Safety Officer, performed a review of the radiological operations at the DLA Strategic Materials (DLA- SM) Scotia Depot in Scotia, NY. The results of the review indicated that the depot had an effective Occupational Radiation Protection Program. \_\_\_\_ items were identified that did not meet the requirements of the DLA-SM Nuclear Regulatory Commission License or the DLA-SM ORPP and are identified in sections \_\_\_\_ of this report. There were \_\_\_\_ health and safety concerns identified as a result of the storage and handling of radioactive material at Scotia. Exposures for depot personnel have been maintain ALARA.

Implementation of the following recommendations will improve the overall management and regulatory compliance of the ORPP at Scotia.

- a. \_\_\_\_ [ORPP section \_\_\_\_]
- b. \_\_\_\_ [10 CFR 20. \_\_\_\_]
- c. \_\_\_\_ [10 CFR 19. \_\_\_\_]



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## DISCUSSION

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### I. ADMINISTRATION

Mr./Ms. \_\_\_\_ was designated as the Radiological Safety Officer.

#### LICENSE

Radiological operations were authorized under NRC license STC-133, Amendment No. \_\_\_\_, issued \_\_\_\_ expiring on February 29, 2020. The license authorizes the storage, sampling, repackaging and transfer natural uranium and thorium ores, concentrates or solids. The license was implemented under the DLA Strategic Materials ORPP manual

#### INVENTORY

The license authorizes DLA Strategic Materials to possess a total of 2,000,000 kg of radioactive material in the form of uranium and thorium contained in ores, concentrates, and solids. Inventories at specific locations were not limited. DLA-SM records dated \_\_\_\_ indicate that the depot possessed a total of \_\_\_\_ pounds of thorium, The weights agree/disagree with depot records. A physical inventory was last conducted by \_\_\_\_ on \_\_\_\_ . Inventory results were in agreement with records.

### II. DOSIMETRY

Thermoluminescent dosimeters (TLD) are available for all employees with access to the radioactive materials; a supply is kept on hand for visitors. TLD's are supplied and analyzed by the U.S. Army Ionizing Radiation Dosimetry Center (USAIRDC) at the Redstone Arsenal. USAIRDC possess an NVLAP certification. All TLD's are stored in and are issued to workers when they \_\_\_\_.

The writer reviewed the results of the personnel monitoring for the past year. A total of \_\_\_\_ TLD's had been issued to personnel working at the depot. The monitoring results indicated that the exposures were below the 5.0 Rem annual limit specified by the ORPP. The range of recorded annual exposures was xx to xx Rem.

***\*Each person issued a TLD has (has not) completed an exposure history (Form 1952). Copies were (were not) maintained by the RSO. Exposure records had been reviewed (has not been reviewed) and the RSO provided (did not provide) each worker with an annual report for the previous year.(Include explanation if any of these tasks were not completed.)***

Internal dosimetry is not routinely performed due to the nature of storage.

## **PUBLIC DOSE COMPLIANCE**

Dose rate measurements were made at the perimeter of the depot which indicated that levels were at background. Therefore the annual dose to members of the public in the unrestricted area outside the depot was zero. The property inside the depot fence is a controlled area. There are restricted areas at the depot in \_\_\_\_.

*\*There are no members of the public routinely present in the controlled area. Annual dose was calculated at \_\_\_\_ mrem per year which is within the allowable limits (100 mrem) noted in 10 CFR 20.1301 (see attached calculation).*

## **III. TRAINING**

The RSO has received the formal radiological safety classroom training required by the ORPP [section 17.1] and received training in DoT Regulations on \_\_\_\_.

General worker training of depot employees and security personnel, *if required*, was accomplished by the RSO on \_\_\_\_\_. The RSO maintained a detailed outline of the training topics presented during the class. Scope of the training met the requirements of the ORPP [section 17.2].

## **IV. EMERGENCY RESPONSE**

Emergency Plan *(Provide a narrative including but not limited to the date of the latest revision and the date of the lastest discussion or agreements with offsite responders.)*

Emergency response personnel

## **V. RADIATION SURVEYS**

Last survey

Instrumentation-this survey

Dose rates

## **VI. RECEIPTS, SHIPMENTS, AND DISPOSAL**

No receipts, shipments or disposals were made since the last annual survey. *(Subject to change)*

## **VII. INSTRUMENTATION (See attached spreadsheet and calibration certificates)**

The depot had an adequate supply of instrumentation on hand to ensure successful operation of the ORPP. Instrumentation consisted of an \_\_\_\_\_ with a \_\_\_\_\_. All calibrations had been accomplished within the allowable (every 365 days) time frames by the \_\_\_\_\_ Company of \_\_\_\_\_.

## VIII. INCIDENTS

No incidents were reported since the last survey.

## IX. STORAGE AREAS

Locations

Type construction

Building security (doors, locks, seals)

Shielding

## X. POSTING

NRC Form 3

Section 206, Public Law 93-438

NFPA signs

“CAUTION RADIATION AREA”

“CAUTION RADIOACTIVE MATERIALS”

## XI. OTHER

Projects

Audits

NRC Inspections

*\* Subject to change based on results of survey*

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## CONCLUSION

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The ORPP, at the DLA Strategic Materials Scotia Depot, was effective. Implementing the following recommendations will improve the overall management and regulatory compliance.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_