ACCEPTANCE REVIEW MEMO (ARM)

Licensee: Dept of Army, Corpus Christi Army Depot

License No.: STB-1168

Docket No.: 040-08177

Mail Control No.: 471256

Type of Action: Amend

Date of Requested Action: 01-31-07

Reviewer Assigned:

ARM reviewer(s): Torres

Response	Deficiencies Noted During Acceptance Review
	[ ] Open ended possession limits. Limit possession. Submit inventory. [ ] Submit copies of most recent leak test results. [ ] Add - delete IC license condition. Add IC paragraph in cover letter. [ ] Split license from cover letter. Add SUNSI marking to license. [ ] Ask the licensee if they have any type-amount of EPAct Material.

Reviewer's Initials: _____ **Date:** _____

RTT

☐Yes ☐No Unrestricted release Group 2 or >: Transfer memo to FCDB within 10 days.

☐Yes ☐No Decommissioning notification should be completed within 30 days.

☐Yes ☐No Termination request < 90 days from date of expiration

☐Yes ☐No Expedite (medical emergency, no RSO, location of use/storage not on license, RAM in possession not on license, other)

☐Yes ☐No TAR needed to complete action.

Branch Chief's and/or Sr. HP's Initials: _____ **Date:** _____

SUNSI Screening according to RIS 2005-31

☐Yes ☑No **Non-Publicly Available, Sensitive** if any item below is checked

General guidance:

_____RAM = or > than Category 3 (Table 1, RIS 2005-31), use Unity Rule
_____Exact location of RAM (whether = or > than Category 3 or not)
_____Design of structure and/or equipment (site specific)
_____Information on nearby facilities
_____Detailed design drawings and/or performance information
_____Emergency planning and/or fire protection systems

Specific guidance for medical, industrial and academic (above Category 3):

_____RAM quantities and inventory
_____Manufacturer's name and model number of sealed sources & devices
_____Site drawings with exact location of RAM, description of facility
_____RAM security program information (locks, alarms, etc.)
_____Emergency Plan specifics (routes to/from RAM, response to security events)
_____Vulnerability/security assessment/accident-safety analysis/risk assess
_____Mailing lists related to security response

Branch Chief's and/or Sr. HP's Initials: RTT **Date:** 2-16-07

Pre-Licensing Screening

Applicant Information: **Control No.** 471256

Name: Dept of Army, Corpus Christi Army Depot	Type of Request: Amend Program Code(s):
Location: TX	License No.: STB-1168 Docket No.: 040-08177

STEP 1–Radioactive Materials and Quantities Requested:

		Yes or No
Instructions for Step 1: **Complete Step 1 for all applications**. If all your responses in Step 1 are "No" then do not complete Step 2 (Screening Criteria). Sign and date the completed step-sheet and add it as the sensitive and non-publicly available OAR in ADAMS. If a "yes" response is indicated for any item in Step 1, also complete Step 2. If the type of use is subject to a Security Order or the requirements for increased controls, complete Step 3 (Item A or Item B) without delay.		
A.	The request is from a new applicant.	N
B.	NUREG-1556, Volume 20, Section 4.9 indicates a licensing site visit is needed for the requested type of use, e.g., (1) Type A broad scope license, (2) panoramic irradiator containing > 10000 curies, (3) manufacturers or distributors using unsealed radioactive material or significant quantities of sealed material, (4) radioactive waste brokers, (5) radioactive waste incinerators, (6) commercial nuclear laundries, and (7) any other application that in the judgement of the reviewer and cognizant supervisor involves complex technical issues, complex safety questions, or unprecedented issues that warrant a site visit.	N
C.	The applicant requested certain radionuclides and quantities that equal or exceed the Risk Significant Quantity (TBq) values in the table, below, that have been **"highlighted"** by the reviewer	N

Table of Risk Significant Quantities

(Category 2 Quantities, IAEA Safety Guide No. RS-G-1.9, Categorization of Radioactive Sources, August 2005)

Radionuclide	Risk Significant Quantity (TBq[1])	Risk Significant Quantity (Ci[1])	Radionuclide	Risk Significant Quantity (TBq[1])	Risk Significant Quantity (Ci[1])
Am-241	0.6	16	Pm-147	400	11,000
Am-241/Be	0.6	16	Pu-238	0.6	16
Cf-252	0.2	5.4	Pu-239/Be	0.6	16
Cm-244	0.5	14	Ra-226[2]	0.4	11
Co-60	0.3	8.1	Se-75	2	54
Cs-137	1	27	Sr-90 (Y-90)	10	270
Gd-153	10	270	Tm-170	200	5,400
Ir-192	0.8	22	Yb-169	3	81

[1] The primary values are TBq. The curie (Ci) values are for informational purposes only.

[2] The Atomic Energy Act, as amended by the Energy Policy Act of 2005, authorizes NRC to regulate Ra-226 and NRC is in the process of amending its regulations for discrete sources of Ra-226.

	Yes , No, or Not Applicable (NA)
Calculations of the Total Activity or the Unity Rule are attached to document whether or not the screening criteria in Step 2 were also completed to evaluate the application. **NOTE–If an amendment of an existing license is being requested, the calculations will include the previously authorized quantities for the radionuclide(s).**	
Total Activity–multiple activities are requested for a single radionuclide and the sum of the activities equals or exceeds the quantity of concern for the radionuclide	—
Unity Rule--multiple radionuclides are requested and the sum of the ratios equals or exceeds unity, e.g.,[(total activity for radionuclide A) ÷ (risk significant quantity for radionuclide A)] + [(total activity for radionuclide B) ÷ (risk significant quantity for radionuclide B)] ≥ 1.0.	—

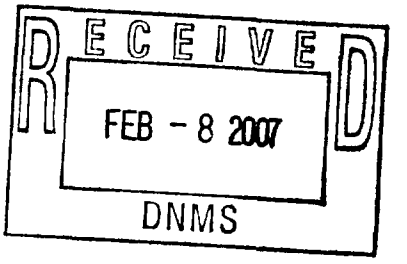
Signature and Date for Step 1:

R/RC 2-16-07

License Reviewer and Date

DEPARTMENT OF THE ARMY
CORPUS CHRISTI ARMY DEPOT
308 CRECY STREET
CORPUS CHRISTI, TEXAS 78419-5260

31 January 2007



Office of the Commander

Nuclear Materials Licensing Branch
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Dear Sir or Madam:

Enclosed is a completed NRC Form 313, Application For Material License form and supporting documentation, which transmits an amendment request for Source Material License STB-1168, Docket No. 040-08177.

Request the amendment package be approved and an amendment to the license issued.

For additional information relevant to this request, Mr. Lon King is the point of contact. He may be contacted at (361)961-2326, extension 238 or by email at lon.king@ccad.army.mil.

Timothy A. Sassenrath
Colonel, US Army
Commanding

Enclosure

No. 171256

SUMMARY OF REQUESTED AMENDMENT

This amendment requests the deletion in their entirety, of the items identified in sections 6a, 7a, 8a, and 9a of the license (Amendment No. 22). It requests the working possession limit for the isotope of section 6b of the license (Amendment No. 22) be increased to 5,000 kilograms. Additionally, the amendment seeks the deletion of all references (section 6b of the license) to nickel thorium alloys and thorium impregnated optical glass (section 9b of the license).

This amendment transmits a new base regulation, CCADR 385-6 to replace the existing Corpus Christi Army Depot regulation CCADR 11-9. The revised regulation clarifies ambiguous areas contained in the superseded document and eliminates the requirement for an annual emergency response drill.

NRC FORM 313 (4-2004) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIAL LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 10/31/2005

Estimated burden per response to comply with this mandatory collection request: 7 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

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

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

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

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

IF YOU ARE LOCATED IN:

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

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

RECEIVED
FEB - 8 2007

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

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-4005

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 STB-1168
- ☐ C. RENEWAL OF LICENSE NUMBER

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

Commander
Corpus Christi Army Depot
308 Crecy St., Stop 23
Corpus Christi, TX 78419-5260

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Corpus Christi Army Depot
308 Crecy St.
Corpus Christi, TX 78419-5260

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Lon King

TELEPHONE NUMBER

(361) 961-2326

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

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

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

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

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

9. FACILITIES AND EQUIPMENT

10. RADIATION SAFETY PROGRAM

11. WASTE MANAGEMENT

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

FEE CATEGORY | AMOUNT ENCLOSED $

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

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTANED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A 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

TIMOTHY A. SASSENRATH, Colonel, Aviation Commanding

SIGNATURE

DATE

31 Jan 07

FOR NRC USE ONLY

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

APPROVED BY

DATE

No. 471256

Item 5 – Radioactive Material		
Element and mass number **(a)**	**Chemical and/or physical form** **(b)**	**Maximum amount which will be possessed at any one time** **(c)**
Thorium	Magnesium-Thorium Alloys, solid, less than 4% by weight thorium	5,000 kilograms

Item 6 – Purposes(s) for which licensed material will be used

For use in performing maintenance operations associated with aircraft engines and their components, which contain thorium. Maintenance operations shall include but not be limited to the removal of installed engine components and any cleaning, corrosion removal, abrasive blasting, brushing, sanding, filing, engraving, tapping, drilling, grinding, milling, machining, welding, metal spraying, de-burring, dent and nick removal, or cleaning of castings. Additional operations include the application of chemical type strippers, corrosion treatment chemicals, and protective coatings to aircraft engine components and the subsequent reinstallation of those components.

Item 10 – Radiation Safety Program

See attached CCADR 385-6 dated 10 July 2006

Corpus Christi Army Depot
Regulation 385-6

Nuclear and Chemical Weapons and Materiel

CCAD Radiation Safety Program

Corpus Christi Army Depot
Corpus Christi, TX 78419-5211
10 July 2006

UNCLASSIFIED

Table of Contents

Chapter 1
Introduction

1-1. Purpose
This regulation establishes the CCAD Radiation Safety Program. It prescribes the responsibilities and procedures for procuring, receiving, storing, shipping, using, transporting, maintaining, repairing, and disposing of ionizing radiation emitting material. Additionally, ionizing radiation emergency procedures are provided.

1-2. References
Required and related publications, referenced forms, and record keeping requirements are listed in Appendix A.

1-3. Explanation of abbreviations and terms
Abbreviations and special terms used in this regulation are explained in the Glossary.

1-4. Responsibilities

a. The Commander of CCAD will:

(1). Establish a formal, written radiation safety program.

(2). Appoint, in writing, qualified individuals as Radiation Safety Officer(s) (RSO), and Alternate Radiation Safety Officer(s) (ARSO) to monitor the radiation safety program. Qualification determination will be in accordance with AR 11-9, Army Radiation Safety Program, (http://www.apd.army.mil/pdffiles/r11_9.pdf).

(3). Ensure compliance with Federal, Department of Defense, Department of Army, and CCAD regulations.

b. The Radiation Safety Officer will:

(1). Provide the Commander and users of radiation sources with advice and assistance on all matters relevant to ionizing radiation safety.

(2). Implement the CCAD Radiation Safety Program.

(3). Review all operations, equipment, facilities, and procedures involving the use or handling of radiation sources to determine compliance with regulations and to ensure that personnel exposures are kept as low as is reasonably achievable (ALARA).

(4). Maintain an accurate inventory of sources of ionizing radiation possessed by the Depot.

(5). Perform health physics surveys and leak tests of radiation sources, or cause such surveys or tests to be performed, and maintain records of the surveys and leak tests.

(6). Evaluate all operations involving the use or storage of radiation sources to determine the need for restricted access, dosimetry, or other control measures.

(7). Require that Standard Operating Procedures (SOPs) be written by directorates for operations involving radiation sources.

(8). Ensure notices to workers, warning signs, instructions, and other notices are posted as required by Title 10 Code of Federal Regulations (10 CFR), Parts 19, 20, and 21 (http://www.gpoaccess.gov/cfr/index.html) and AR 11-9 and Department of the Army (DA) regulations.

(3). Ensure personnel have received adequate training and instruction prior to beginning work with ionizing radiation.

(4). Minimize and control contamination.

(5). Ensure sources are secured against unauthorized use.

(6). Control personnel exposure ALARA.

(7). Prior to the beginning of any new or existing operation that involves radioactive material or the potential exposure of personnel to radiation, prepare an SOP for review and approval by the RSO. Each SOP shall be operation specific.

(8). Enforce the requirements of all applicable regulations.

(9). Immediately report to the RSO or ARSO any abnormal occurrence, incident, or accident, personnel injury (however slight), suspected overexposure, and/or suspected internal exposure involving radioactive material.

(10). Prevent the unauthorized release of radioactive waste.

(11). Notify the RSO or ARSO of the receipt of any unauthorized ionizing radiation source.

(12). In the event of an emergency involving radioactive material:

(a). Instruct non-essential personnel to proceed to and remain in a designated assembly area.

(b). Pending the arrival of emergency response personnel, obtain immediate assistance from the first available source of uncontaminated personnel to form a perimeter cordon to prevent unauthorized personnel from entering the area.

(c). Effect appropriate actions as outlined in Appendix B and any other actions deemed necessary to control contamination and limit the exposure of personnel.

(d). Assist the RSO during the emergency and in post-emergency monitoring and decontamination operations.

e. Radiation Workers will:

(1). Be familiar with and follow SOPs, rules, regulations, and special instructions.

(2). Appropriately use all prescribed Personnel Protective Equipment (PPE).

(3). Immediately report to the supervisor any abnormal occurrence, incident, or accident, personal injury (however slight), suspected overexposure, and/or suspected internal exposure.

(4). Be knowledgeable of the material in Appendix B to this Regulation.

f. The Medical Director, Occupational Health Clinic (OHC) will:

(1). Collect bio-assay samples when required.

(2). Examine personnel suspected of radiation overexposure, determine treatment and disposition, and notify the RSO of the occurrence and the results.

(3). Prepare locally required and off-depot required reports pertaining to radiation exposure, treatments, and examination. A copy of all reports will be forwarded to the RSO (FN 11-9c1).

(4). In the event of an emergency involving radioactive material:

(a). Provide facilities for and assist in the decontamination of personnel.

(b). Maintain contact with the Incident Commander and comply with instructions issued by the RSO.

(c). Collect body excretions for bio-assay from those personnel who may have been internally contaminated.

g. The Skills Development Office will: Provide to the RSO a copy of all radiation safety training documentation.

h. The Chief, CCAD Security Division will:

(1). Dispatch personnel to the emergency scene to cordon off the area as described in Appendix B and control access to the area.

(2). Ensure security personnel notify the RSO or ARSO immediately of a reported radiation abnormal occurrence, incident, or accident.

(3). Assist in rescuing injured personnel.

(4). Maintain communication with the Incident Commander and aid in other emergency actions as requested by the RSO.

(5). Declare the cordoned area off limits and control entry to and exit from the area until cleared by the RSO.

(6). Ensure all emergency response personnel are knowledgeable of the material in Appendix B of this Regulation.

i. Defense Reutilization and Marketing Service (DRMS). The DRMS shall not accept into the salvage yard an end item containing radioactive material, nor radioactive material in any other form. If radioactive material is mistakenly turned in to DRMS, the RSO shall be immediately notified.

j. The Chief, CCNAS Fire Department will:

(1). Be the Incident Commander during emergencies involving the fire department.

(2). Dispatch personnel to the site to satisfy emergency requirements and assist in rescue operations.

(3). Ensure all emergency response and radiation operational personnel are knowledgeable of the material in this appendix.

1-5. Policy

a. Personnel exposure to radiation will be kept ALARA.

b. All operations at CCAD will comply with the conditions and limitations prescribed in applicable Federal, DA, and CCAD regulations.

c. The requirements contained in TM 3-261, Handling and Disposal of Unwanted Radioactive Material (http://www.mildocs.com/Search_for_ETMs.html); TB 43-0116, Identification of Radioactive Items in the Army; AR 11-9, The Army Radiation Safety Program; U.S. Army Armament, Munitions, and Chemical Command (AMCCOM) Pamphlet 385-1, Handbook for Disposal of Unwanted Radioactive Material; and this Regulation will apply to all radioactive waste operations at CCAD.

d. Items of supply containing radioactive material (RAM) that are obsolete, unserviceable, or condemned and which are prohibited from resale will be classified as radioactive waste.

e. Excess radioactive commodities and radioactive waste material will not be turned in to the DRMS. Local disposal of radioactive waste as either general refuse or radioactive waste is prohibited.

f. Sources which are known to be or are suspected of leaking radioactive material will not be handled by operational personnel. The CCAD Radiation Safety Office will be notified immediately for disposal of such sources.

g. Material which has been determined to be radioactive waste will be placed in double-plastic bags. The RSO or alternate will be notified of the type of material and its location by telephone or e-mail. Arrangements will be made to have the radioactive waste transferred to Building 132, the Low-Level Radioactive Waste Storage Facility.

h. Only obsolete, unserviceable, and/or condemned items containing radioactive material will be turned over to the RSO as radioactive waste. Radioactive material and items which may be repaired or utilized at a later time will be turned in through supply channels for storage.

i. The RSO will accumulate radioactive waste at Building 132 and will request disposal instructions from US Army Armament, Munitions, and Chemical Command (AMCCOM), Rock Island, Illinois when enough material has been accumulated for a shipment to a disposal site.

j. Radioactive waste will be disposed of in accordance with all applicable published policies, regulations, licenses, and authorizations.

k. The responsibilities of the various elements involved in an abnormal occurrence or a radiation accident or incident are as established in the Radiological Emergency Procedures contained in Appendix B.

Chapter 2
Personnel Dosimetry

a. Dosimeters will be assigned to personnel in accordance with the requirements and guidelines published in 10 CFR Part 20.

b. Personnel who will be required to wear dosimeters include:

(1). Operators of industrial X-ray equipment.

(2). Operators of analytical X-ray equipment.

(3). Other personnel who through the course of employment are assigned routine tasks that result in a whole body exposure in excess of 2.0 millirem (mrem) in any one hour.

c. Management of the dosimetry program will comply with the requirements of 10 CFR 20, AR 11-9, and U.S. Army Ionizing Radiation Dosimetry Program Customer Handbook.

d. Personnel dosimeters will be submitted to the U.S. Army Ionizing Radiation Dosimetry Center (USAIRDC), Redstone Arsenal, Alabama for processing and evaluation.

e. Personnel dosimetry will not be issued to visitors. Visitors requiring access to a radiation restricted area where personnel dosimetry is required must possess a personnel dosimeter issued by their employer.

f. Each employee must complete a DD Form 1952, Dosimeter Application and Record of Occupational Radiation Exposure (http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1952.pdf) prior to issuance of a dosimeter.

g. Successful completion of radiation safety training appropriate for the tasking will be provided prior to the issuance of a dosimeter.

h. A DD Form 1141, Record of Occupational Exposure to Ionizing Radiation, (available in CCAD Document Warehouse) or equivalent will be initiated and maintained for each individual being monitored via dosimetry.

i. The RSO will issue and retrieve dosimeters in accordance with current DA personnel dosimetry program policy.

j. The RSO will forward the dosimeters and their accompanying utilization report to the USAIRDC, Redstone Arsenal.

k. The RSO will review personnel exposure records quarterly and provide employees a copy of their quarterly exposure record and the cumulative annual exposure history at the end of each annual reporting period.

Note: Personnel dosimetry records contain Privacy Act information.

l. Should a dosimeter become lost or damaged, an administrative dose will be assigned following the guidance provided by the U.S. Army Ionizing Radiation Dosimetry Program Customer Handbook.

m. Whole body dosimeters will be worn on the front of the body, below the shoulders and above the hips, on the outside of clothing and protective equipment.

n. Finger-ring dosimeters will be worn on the digit of the hand that is most susceptible to exposure during the monitored operation.

o. When dosimeters are not being worn, they will be stored in a location approved by the RSO.

p. Radiation sources will not be stored or left in the proximity of dosimeter storage locations.

q. Personnel will not damage or expose personnel dosimeters intentionally and shall not tamper with the dosimeter in any way.

Chapter 3
Training

a. The RSO and as appropriate, each ARSO will: Receive the training necessary to maintain competency as a practicing health physicist.

(1). As a minimum, the training will meet requirements of applicable DA regulations.

(2). The training will be commensurate to the types of radiation sources and associated hazards which may be encountered at CCAD.

b. Supervisors will: Ensure each employee designated as a radiation worker receives initial training prescribed by the RSO prior to beginning the assigned task, and refresher training as required to remain competent in working with ionizing radiation sources.

(1). As a minimum, initial and refresher training shall include the following:

(a). Introduction to radiation

(b). Atomic structure

(c). Characteristics of ionizing radiation

(d). Radioactive material

(e). Effects of ionizing radiation on matter

(f). Radiation units of measure

(g). Biological effects of ionizing radiation

(h). Basic concepts of radiation safety

(i). A thorough review of this Regulation, applicable SOPs, and any other written or verbal instructions necessary to protect the safety and health of the employee.

(2). A computer disc titled U.S. Army Basic Radiation Training is available from the RSO and fulfills the training requirements of items (a) through (h).

(3). Training documentation will consist of:

(a). An attendance roster that provides command name, date of training, start time, start date, stop time, stop date, subject(s), objectives, training materials utilized, training location, name of instructor(s), signature of instructor(s), and list of attendees.

(b). An outline for the training.

(c). A copy of the answer key for the written examination utilized to evaluate successful completion of the training.

(d). Scores on the written examination for individual employees.

c. The RSO will: Ensure ionizing radiation safety refresher training is provided to all radiation workers annually or more frequently as situations dictate.

d. Instructions regarding NRC Regulatory Guides 8.13, Instruction Concerning Prenatal Radiation Exposure (http://www.nrc.gov/reading-rm/doc-collections/reg-guides/occupational-health/active/8-13/index.html) and 8.29 Instruction Concerning Risks From Occupational Radiation Exposure (http://www.nrc.gov/reading-rm/doc-collections/reg-guides/occupational-health/active/8-29/08-029.pdf#search='reg%20guide%208.29') will be made available to all female radiation workers and their supervisors.

e. Supervisors are responsible for scheduling employees for initial and refresher training when notified of its availability.

f. Supervisors and radiation workers shall review this regulation and any applicable SOPs semiannually. The review will be documented by a signed statement from each individual. The signed statement will be forwarded to the RSO.

Chapter 4
Procurement of Radioactive Material

a. Requests to procure, acquire, use, store, transport, maintain, or dispose of items that emit ionizing radiation will be forwarded to the RSO for review. No radiation sources may be procured or acquired without gaining prior written approval of the RSO.

b. No source of radiation may be brought aboard CCAD unless it meets at least one of the following criteria and has the prior approval of the RSO:

(1). It is a component of an authorized standard item of supply.

(2). It is licensed, under an NRC License, to an activity aboard CCAD.

(3). It is authorized by an ARA.

(4). It is included in a DA Radiation Permit issued by the Commander.

(5). It is authorized by the CCAD Commander for temporary storage or use, not to exceed 15 days.

c. Adequate procedures, facilities, equipment, and training shall be in place to ensure the safe use ionizing radiation emitting sources. Failure to comply will result in delay of start-up or interruption of operations until requirements are met.

d. Request for ARAs or applications for any NRC licenses will be forwarded to the RSO for review. Amendments to and renewals of existing authorizations, permits and/or licenses are subject to the same requirement.

Chapter 5
Storage of Radioactive Material

a. Radioactive material shall be stored only in approved, properly secured, and appropriately posted storage areas or buildings. The areas or buildings shall be free from the danger of flooding, fire, and explosions.

b. Radioactive material shall **not** be stored in the same warehouse section with explosives, flammable material, photographic film, food products, or other incompatible commodities.

c. Radioactive material storage areas will. Be posted with the following signs:

(1). "Caution – Radioactive Material."

(2). If applicable as determined by a radiation exposure survey, "Caution - Radiation Area," "Danger - High Radiation Area."

(3). "No Eating, Drinking, or Smoking."

(4). "Restricted Area – No Entry Without Authorization."

d. A specific SOP for each storage area, or a general storage SOP with specific instructions for each storage area shall be generated. The SOP and other required documents shall be posted in the area.

e. Operations within a restricted area shall be performed in the minimum required time and at the maximum practical distance from sources of measurable external radiation.

f. Areas used for storage of radioactive material shall be kept to the minimum number practical to minimize effort for adequate control.

g. Supervisors of operations involving radiation producing sources shall maintain an inventory of the radioactive items stored in their respective areas.

h. A list of radioactive material and authorized storage locations will be provided to the Corpus Christi Naval Air Station (CCNAS) Fire Department annually.

Chapter 6
Handling of Radioactive Material

a. Personnel will not be allowed to eat, drink, smoke, chew, dip, or apply cosmetics in restricted areas or while otherwise working with radioactive material.

b. Food, beverages, tobacco, and cosmetics shall **not** be stored in work areas where radioactive material is being used.

c. Personnel with unprotected wounds shall not be allowed to work with radioactive material.

d. Cuts, scratches, or punctures occurring during work with radioactive material shall be cause for an employee to report to the OHC immediately for treatment. Questions regarding contamination and associated hazards will be addressed by the RSO.

e. Personnel shall not tamper with items containing radioactive material or in any way expose the radioactive material. Scheduled maintenance of aircraft engine parts is exempt from this requirement.

f. If a radioactive source becomes broken or exposed, immediately notify the RSO. Avoid contact with the item. Clear the area and await further instructions from the RSO.

g. Personnel handling radioactive material shall wash their hands thoroughly after completing their task, and before eating, drinking, smoking or applying cosmetics.

h. Personal protective equipment, e.g., gloves and as appropriate, laboratory coats or coveralls, shall be used where the possibility of contamination exists.

i. Radioactive material operations shall be performed via the guidance of an approved SOP. The SOP shall be posted in the work area.

Chapter 7
Maintenance of Radioactive Items of Supply

a. Only authorized maintenance will be performed.

b. Only serviceable items of supply containing radioactive material will have authorized maintenance performed.

c. Maintenance of radioactive items of supply and/or components shall not be undertaken without:

(1). The necessary authority (NRC license or ARA).

(2). The necessary facility or facilities.

(3). Adequately trained personnel.

(4). Adequate radiation monitoring equipment.

(5). The necessary personal protective equipment.

(6). An approved SOP.

d. Unserviceable radioactive items of supply shall be turned in to the RSO for proper disposal as radioactive waste or if permitted by regulations, sold to an authorized recipient.

e. Restricted areas and controlled areas will be established upon the recommendation of the RSO.

f. Adequate ventilation and air filtration shall be provided to ensure airborne radioactivity is less than applicable **maximum permissible concentrations**.

g. Tools or equipment designated for use in a restricted area should remain in the restricted area.

h. If contaminated and expendable, tools and equipment shall be disposed of as radioactive waste.

i. The frequency and type of radiological surveys shall be determined by the type of maintenance being performed and the utilization of the work area.

j. Suspected incidents of area or personnel contamination shall be reported to the RSO immediately.

k. Obsolete, unserviceable, or condemned radioactive components removed from items undergoing maintenance shall be double-bagged in plastic bags for disposal as radioactive waste.

Chapter 8
Radioactive Waste Management

a. Radioactive waste generated by the CCAD is disposed of in accordance with current NRC, Department of Transportation, and U.S. Army regulations. Currently, AMCCOM Rock Island, Illinois is the radioactive waste program manager for the Army and issues detailed packaging and shipping instructions to units using radioactive commodities.

b. Radioactive wastes shall be consolidated and stored in Building 132 until a consolidated shipment can be made to a disposal site.

c. Handling, storage, processing, and shipping of radioactive wastes shall be in accordance with published directives.

Chapter 9
Radiological Emergencies

a. Emergency response personnel shall be trained in the proper procedures to follow in the event of a radiological emergency.

b. Operational personnel shall be knowledgeable of actions required in the event of a radiological emergency.

c. The CCAD Radiation Safety Office will maintain radiation detection instrumentation and emergency supplies necessary to respond to a credible radiological emergency.

d. The primary considerations in any emergency are the preservation of life and the protection of personnel from radiation hazards. The confinement of radioactive contamination to the local area of the emergency shall be secondary to that concern.

e. Except for situations involving the CCNAS fire department, the RSO or ARSO will take charge and direct all emergency actions at a radiation emergency site. Pending the arrival of the RSO or ARSO, the area supervisor during normal duty hours, or the first emergency personnel on the scene during non-duty hours, shall direct required emergency actions.

f. Specific procedures to be followed in the event of a radiological emergency are provided in Appendix B.

Appendix A
References

Section I
Required Publications

AR 11-9. (http://www.apd.army.mil/pdffiles/r11_9.pdf)
The Army Radiation Safety Program (Cited in Chapter 1, Para 1-4.a.(2).)

AR 385-40. (http://www.apd.army.mil/pdffiles/r385_40.pdf)
Accident Reporting and Records (Cited in Chapter 1, Para 1-5.b.(17).(g).)

10 CFR. (http://www.gpoaccess.gov/cfr/index.html)
Energy (cited in paras 1-5.b(9), 1-5.b(17)(g), and the Glossary)

10 CFR, part 19. (http://www.gpoaccess.gov/cfr/index.html)
Notices, Instructions and Reports to Workers: Inspection and Investigations (Cited in Chapter 1, Para 1-5.b.(8).)

10 CFR, part 20. (http://www.gpoaccess.gov/cfr/index.html)
Standards for Protection Against Radiation (Cited in Chapter 1, Para 1-5.b.(8).)

10 CFR, part 21. (http://www.gpoaccess.gov/cfr/index.html)
Reporting of defects and noncompliance [cited in para 1-5.b.(8).]

NRC Regulatory Guide 8.13. (http://www.nrc.gov/reading-rm/doc-collections/reg-guides/occupational-health/active/8-13/index.html)
Instruction Concerning Prenatal Radiation Exposure (Cited in Chapter 3, Para 3.d)

NRC Regulatory Guide 8.29. (http://www.nrc.gov/reading-rm/doc-collections/reg-guides/occupational-health/active/8-29/08-029.pdf#search='reg%20guide%208.29')
Instruction Concerning Risks from Occupational Radiation Exposure (Cited in Chapter 3, Para 3.d).

TM 3-261. (http://www.mildocs.com/Search_for_ETMs.html)
Handling and Disposal of Unwanted Radioactive Material (Cited in Chapter 1, Para 1-5.c)

U.S. Army Ionizing Radiation Dosimetry Program Customer Handbook
(Cited in Chapter 2, Para 2.c)

Section II
Related Publications
A related publication is merely a source of additional information. The user does not have to read it to understand this regulation.

Nuclear Regulatory Commission License STB 1168. (http://www.nrc.gov/reading-rm/adams/docket40.pdf)

TB 43-0116.
Identification of Radioactive Items in the Army (Cited in Chapter 1, Para 1-5.c.)

AMCCOM PAM 385-1.
Handbook for Disposal of Unwanted Radioactive Material (Cited in Chapter 1, Para 1-5.c.)

49 CFR. (http://www.gpoaccess.gov/cfr/index.html)
Transportation

Section III
Prescribed Forms

This section contains no entries.

Section IV
Referenced Forms

DD Form 1141. (Available from the CCAD Blank Forms Warehouse)
Record of Occupational Exposure to Ionizing Radiation (Cited in Chapter 2, Para 2.h.)

DD Form 1952. (http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1952.pdf)
Dosimeter Application and Record of Occupational Radiation Exposure (Cited in Chapter 2, Para 2.f.)

NRC Form 5. (http://www.nrc.gov/reading-rm/doc-collections/forms/nrc5.pdf)
Occupational Dose Record for a Monitoring Period (Cited in Chapter 1, Para 1-4.b.(12).)

SF 364 (Available in FormFlow)
Report of Discrepancy

Section V
Recordkeeping Requirements

FN # 385
General safety correspondence files

FN 11-9c1
Personnel bioassays - Laboratory performing bioassay service and Army Ionizing Radiation Dosimetry Center (Cited in Chapter 1, Para 1-4.f.(3).)

Appendix B
Radiological Emergency Plan

1. Emergencies involving ionizing radiation and/or radioactive material can be classified as abnormal occurrences, significant abnormal occurrences, incidents, or accidents. Of the four classifications, an abnormal occurrence is considered to be the least significant while an accident is considered to be the most significant. Abnormal occurrences generally do not require reporting to the licensor while incidents and accidents do. The determination of the classification of any unplanned event and the associated reporting requirements shall be the responsibility of the RSO.

2. The Glossary provides a detailed definition for each of the four emergency event categories.

3. All radiological emergencies, regardless of how insignificant, shall be reported to the RSO.

RADIOLOGICAL EMERGENCY PROCEDURE NO. 1

Unplanned Release of Radioactive Material

IMMEDIATE ACTION

1. Stop the release.

2. If possible, cover the material to prevent its spread. Shut off all ventilation and close entry and exit doors to the site.

3. Warn others of the situation.

4. Evacuate all personnel to an assembly area that is a minimum of 100 feet upwind of the release site. Once assembled, personnel should not leave the area until cleared to do so by the RSO.

5. Isolate the site. Restrict access to the affected area.

6. Minimize exposure to personnel and contamination of equipment and material.

7. Notify the RSO

8. Notify CCAD Security Division.

SUPPLEMENTARY ACTION

1. Survey all personnel who are suspected of being contaminated. If possible, decontaminate them at the site. If complete decontamination on site is not possible, control the contamination and remove personnel to an appropriate area where final decontamination will be performed.

2. Smoking, eating, drinking, or applying cosmetics by involved personnel and those in the immediate area of the site shall be prohibited.

3. Document and report the incident as appropriate.

RADIOLOGICAL EMERGENCY PROCEDURE NO. 2

Loss of Radioactive Material

IMMEDIATE ACTION

1. When a source is discovered to be missing, immediately notify the RSO.
2. Take immediate steps to recover the source.

SUPPLEMENTARY ACTION

1. Conduct a physical inventory of all assigned sources.

Note: Until all efforts to find the missing radioactive material have been exhausted, the radioactive material is only missing, not lost.

2. If a determination is made that the radioactive material is lost, report the incident appropriately.

RADIOLOGICAL EMERGENCY PROCEDURE NO. 3

Personnel Overexposure

IMMEDIATE ACTION

1. Immediately notify the RSO of a suspected overexposure.
2. The RSO shall notify the Medical Officer that personnel may have been overexposed.
3. Transport the victim to the OHC.

Note: If the victim exhibits symptoms of shock or is unduly upset, summon an ambulance for transport to the nearest appropriate medical facility.

SUPPLEMENTARY ACTION

1. The Medical Officer and RSO will determine to what extent the person may have been overexposed and will ensure initiation of the appropriate medical surveillance and treatment.
2. As warranted, investigate, document, and report the event.

RADIOLOGICAL EMERGENCY PROCEDURE NO. 4

Fire or Explosion Involving Radioactive Material

IMMEDIATE ACTION

1. Secure the area. If the fire is small and a radiation or other hazard is not imminent, attempts to extinguish the fire may be made using readily available extinguishers or agents. Shut off all ventilation and close entry and exit doors to the site.

2. Warn others of the situation. Evacuate all personnel to an assembly area that is a minimum of 300 feet upwind of the release site. Once assembled, personnel should not leave the area until cleared to do so by the RSO.

3. Isolate the site. Restrict access to the affected area. Minimize exposure to personnel and contamination of equipment and material.

4. Dial 911 (CCNAS Emergency Services) from any on-base phone or 961-3333 from a cellular or off-base phone. Inform the dispatcher of the following:

   a. A radiation emergency exists at (give EXACT LOCATION).

   b. Fire is (or is not) involved.

   c. There is (or is not) injury to personnel.

   d. Your name and call-back number.

5. Notify the RSO.

6. Notify CCAD Security Division.

SUPPLEMENTARY ACTION

1. Evacuated personnel shall remain upwind at least 300 feet from the fire.

2. In the assembly area, segregate potentially contaminated personnel from unaffected personnel.

3. Cordon a perimeter 300 feet upwind and 1000 feet downwind as soon as possible. No smoking, eating, drinking, or application of cosmetics will be allowed within the perimeter.

4. If necessary, bioassays as appropriate will be taken from affected personnel.

5. Personnel entering the incident perimeter shall wear an SCBA while in enclosed areas or downwind of the fire.

6. Personnel, vehicles, and equipment within the incident perimeter will not leave the area until surveyed and, if necessary, decontaminated.

7. When the fire is extinguished, the Incident Commander will notify the RSO that the area is safe to enter for purposes of surveying and decontamination.

RADIOLOGICAL EMERGENCY PROCEDURE NO. 4

Fire or Explosion Involving Radioactive Material

SUPPLEMENTARY ACTION (Continued)

9. Personnel entering the incident perimeter shall wear an SCBA while in enclosed areas or downwind of the fire.

10. Personnel, vehicles and equipment within the incident perimeter will not be allowed to leave the area until surveyed and, if necessary, decontaminated.

11. Once the fire has been extinguished and reentry is safe, the Incident Commander should notify the IRSO that the area is safe to enter for purposes of surveying and decontamination.

12. Both the incident area and the area downwind will be surveyed and contaminated areas identified.

13. Contaminated areas will be decontaminated before being released for unrestricted access.

14. As appropriate, document and report the incident.

RADIOLOGICAL EMERGENCY PROCEDURE NO. 5

Transportation Mishap Involving Radioactive Material

IMMEDIATE ACTION

1. Secure the area.

2. Warn others of the situation. Evacuate all personnel to an assembly area that is a minimum of 100 feet upwind of the release site. Once assembled, personnel should not leave the area until cleared to do so by the RSO.

3. Isolate the site. Restrict access to the affected area. Minimize exposure to personnel and contamination of equipment and material.

4. If the mishap involves fire, refer to Radiological Emergency Procedure No. 4; otherwise, notify CCNAS Emergency Services by dialing 911 from any on-base telephone or 961-3333 from a cellular or off-base telephone and provide the following information.

   a. A radiation emergency exists at (give the EXACT LOCATION).

   b. Radioactive material is involved in a motor vehicle mishap.

   c. Fire is (or is not) involved.

   d. There is (or is not) injury to personnel.

   e. Your name and call-back number.

5. Notify the RSO.

6. Notify CCAD Security Division.

SUPPLEMENTARY ACTION

1. Cordon an incident perimeter at a 100–foot radius. No smoking, eating, drinking, or application of cosmetics will be allowed within the perimeter.

2. Evacuated personnel shall remain upwind just outside the 100-foot radius and in a prescribed assembly area.

3. In the assembly area, segregate potentially contaminated personnel from unaffected personnel.

4. If necessary, bioassays as appropriate will be taken from affected personnel.

5. Personnel, vehicles, and equipment within the incident perimeter will not be permitted to leave the area until they have been surveyed and, if necessary, decontaminated.

6. Both the incident area and the area downwind will be surveyed and contaminated areas identified.

7. Contaminated areas will be decontaminated before being released for unrestricted access.

8. As appropriate, document and report the incident.

RADIOLOGICAL EMERGENCY PROCEDURE NO. 6

Personnel Injury Involving Radioactive Material

IMMEDIATE ACTION

1. Notify CCNAS Emergency Services by dialing 911 from any on-base telephone or 961-3333 from a cellular or off-base telephone and provide the following information.

   a. A radiation emergency exists at (give EXACT LOCATION).

   b. Fire is (or is not) involved.

   c. There is an injury to personnel.

   d. Give your name and call-back number.

2. Notify the RSO.

3. Notify CCAD Security Division.

SUPPLEMENTARY ACTION

1. Remove individuals with minor wounds from the immediate area. Wash minor wounds under running water while spreading the edges of the wound. Detain these individuals at the inside edge of the emergency site perimeter.

Caution: When personnel are seriously injured, all other considerations shall become secondary until life-saving and other appropriate emergency first aid are given and help for rescue (if necessary) and evacuation are summoned.

Caution: Unless there is a high risk to health, no seriously injured or unconscious person shall be moved until bleeding has been controlled, their airway has been cleared, and the possibility of fractures has been assessed with necessary splints applied.

Caution: The injured person shall not be transported until a litter or ambulance is available unless there is a high risk to health.

2. Wrap seriously injured individuals in sheets or blankets to contain any contamination and then move them to the incident perimeter.

3. Emergency personnel inside the perimeter shall be used for transfer of patients to the outside of the incident perimeter.

4. The injured individual shall be transported to the nearest appropriate medical facility and that facility will be notified that the patient is potentially contaminated.

5 Individuals whose injuries do not require immediate medical attention at the OHC will be evaluated for radiation contamination before being allowed to exit the incident perimeter. As necessary, decontaminate as much as possible before transport to the clinic. This decontamination may include the removal of exterior clothing and subsequent decontamination involving the washing and rinsing of contaminated areas of the body with a mild detergent.

RADIOLOGICAL EMERGENCY PROCEDURE NO. 6

Personnel Injury Involving Radioactive Material

SUPPLEMENTARY ACTION (Continued)

6. Emergency personnel who have transported contaminated personnel and who are no longer needed at the accident site will remain at the clinic to be monitored and decontaminated as necessary.

7. All emergency personnel and equipment will be surveyed for radiation contamination and decontaminated as necessary before being returned to work and or service.

8. Appropriately document and report the incident.

Glossary

Section I
Abbreviations

AMCCOM
United States Army Armament, Munitions, and Chemical Command

AR
Army Regulation

CFR
Code of Federal Regulations

DA
Department of the Army

NSN
National Stock Number

RAM
Radioactive Material

SOP
Standard Operating Procedure

Section II
Terms

Abnormal Occurrence
Failure to meet conditions required for the safe operation of radiation producing equipment or safe use of radioactive material. See also Significant Abnormal Occurrence.

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

Accident
See Radiological Accident.

Activity
The rate of disintegration or decay (transformation) of radioactive material. The units of activity are the curie (Ci) and the Becquerel (Bq). See also Radioactivity.

Administrative Dose
The total effective dose equivalent that is assigned to a radiation worker when personal dosimetry is determined to be inaccurate or has been misused, damaged, or lost.

ALARA - (As Low As is Reasonably Achievable)
Acronym; making every reasonable effort to maintain exposures to ionizing radiation as far below the dose limits offered by current regulations as is practical through controlling the possession, use and transfer of radioactive material or any ionizing radiation producing machine, considering the state of technology and the economics of improvement versus the benefits to public health and safety, and consistent with the purpose for which the activity is undertaken.

Area Monitoring
Programmed or routine measurement of the radiation level or radioactive contamination in or on a specific area, building, room, or piece of equipment.

Army Radiation Authorization (ARA)
A Department of the Army Radiation Authorization is a document issued by the DA to elements of the U.S. Army permitting the bearer to procure, receive, possess, store, use, and/or transfer sources of radiation that do not require a Nuclear Regulatory Commission License.

ARA
See Army Radiation Authorization.

ARSO - (Assistant Radiation Safety Officer)
A qualified individual appointed by the Commander who in the absence of the RSO is to be the alternate to the Radiation Safety Officer.

As Low As Reasonably Achievable
See ALARA.

Assistant Radiation Safety Officer
See ARSO.

Becquerel
An SI unit of radioactivity.
One becquerel = 1 disintegration per second (dps, 1/s, or $s^{-1)}$.

3.7×10^{10} dps = 3.7×10^{10} becquerels = 1 curie = 2.22×10^{12} dpm.

dps = disintegrations per second
dpm = disintegrations per minute

Bioassay
Bioassay is the determination of the kind, quantity or concentration, and location of radioactive material in the human body by direct (*in vivo*) measurement or by analysis (*in vitro*) of materials excreted from the body. Commonly employed bioassay techniques include urinalysis, fecal counting, and thyroid monitoring. A bioassay program provides the personnel monitoring necessary to measure operational or accidental uptakes by radiation workers.

Bioassay Personnel Monitoring
See Bioassay

Command
See Installation.

Commission
The Nuclear Regulatory Commission or its duly authorized representatives.

Committed Effective Dose Equivalent ($H_{E,50}$)
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 ($H_{E,50} = . W_T H_{T,50}$).

Contaminated Area
An area where surface contamination exceeds the values of Table 1 of this Regulation.

Contamination
Deposition of radioactive material in any place where it is not desired.

Controlled Area
Any area outside of a restricted area but inside the site (installation) boundary in which radioactive material or ionizing radiation producing devices are used or stored and access to which is controlled by the command (the licensee) for the protection of individuals from exposure to ionizing radiation or any other reason.

Curie (Ci)
A unit of radioactivity equal to that activity of 1 gram of radium-226. One curie = 3.7×10^{10} disintegrations per second (dps, 1/s, or s^{-1}).

1 curie = 3.7×10^{10} dps = 3.7×10^{10} becquerels = 2.22×10^{12} dpm.

dps = disintegrations per second
dpm = disintegrations per minute

DAC (Derived Air Concentration)
The concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2,000 hours under conditions of light work (inhalation rate 1.2 cubic meters of air per hour), results in an intake of one ALI. DAC values are given in Table 1, Column 3, of Appendix B to 10 CFR 20.1001 through 20.2401.

DAC-Hour (Devived Air Concentration-Hour)
The product of the concentration of radioactive material in air (expressed as a fraction or multiple of the derived air concentration for each radionuclide) and the time of exposure to that radionuclide, in hours. A licensee may take 2,000 DAC-hours to represent one ALI, equivalent to a committed effective dose equivalent of 5 rems (0.05 Sv).

Declared Pregnant Woman
A woman who has voluntarily informed her employer (the licensee), in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

Decommission
To remove a facility or site safely from service and reduce residual radioactivity to a level that permits

1) Release of the property for unrestricted use and termination of the NRC license or Army radiation authorization, or

2) Release of the property under restricted conditions and the termination of the NRC license or Army radiation authorization.

Decontamination
The process of removing radioactive contamination from facilities, equipment, and personnel.

Deep Dose Equivalent (H_d)
Applies to whole-body exposure; is the dose equivalent at a tissue depth of 1 cm (1000mg/cm^2)

Dose
A generic term meaning absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent, as defined in the respective definitions included herein. The total quantity of ionizing radiation absorbed per unit mass during a specific time period. For special purposes, it must be appropriately qualified. If not qualified, it refers to absorbed dose.

Dose Equivalent (H_T)
A quantity used in radiation protection to express all radiations on a common scale for calculating the effective absorbed dose. Defined as the product of the absorbed dose in tissue (rad), quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and the Sievert (Sv).

Dose Limits
The permissible upper bounds of ionizing radiation doses.

Dosimeter
Any device used to measure accumulated radiation exposure.

Dosimetry
Devices designed to be worn or carried by an individual for the purpose of detecting, measuring, and assessing an individual's exposure (dose equivalent). Devices include such items as film badges, thermo-luminescent dosimeters (TLDs), self-indicating pocket dosimeters (ionization chambers), and personal ("lapel") air sampling devices.

Dosimetry Processor
An individual or organization that processes and evaluates individual monitoring equipment in order to determine the radiation dose delivered to the equipment.

Effective Dose Equivalent (H_E)
The sum of the products of the dose equivalent to the organ or tissue (H_T) and the weighting factors (W_T) applicable to each of the body organs or tissues that are irradiated ($H_T = . W_T H_T$).

Embryo/Fetus
The developing human organism from conception until the time of birth.

Exposure
(1) Technical Definition – A measure of the ionization produced in air by photons (X or gamma rays); or sum of the electrical charge on all ions of one sign produced in air when electrons liberated by photons are completely stopped in air, divided by the mass of the air in the volume element. The unit of exposure is the roentgen.

(2) General Definition - Being exposed to ionizing radiation or to radioactive material. The act of an individual receiving a dose of radiation.

External Dose
That portion of the dose equivalent received from ionizing radiation sources outside the body.

Extremity or Extremities
The hand(s), elbow(s), arm(s) below the elbow; the foot or feet, knee(s), or leg(s) below the knee.

Facility
The location at which one or more devices or sources of ionizing radiation are installed or located within one building, vehicle, or under one roof and are under the same administrative control.

Free Release
Release of a commodity or end item(s) containing radioactive material for unrestricted use; considered to be contamination free.

General License
A license issued for materials considered inherently safe because of their quantity or design.

General Public
For the purposes of this Regulation, individuals not occupationally associated with a facility or organization shall be considered members of the general public.

Gray
With abbreviation (Gy), the SI unit of absorbed dose. One gray is equal to an absorbed dose of 1 Joule/Kilogram (100 rads).

Half-Life
See Radioactive Half-Life.

High Radiation Area
An area, accessible to individuals, in which ionizing radiation levels from ionizing radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem (100 mr or 1 mSv) in 1 hour at 30 centimeters from the ionizing radiation source or 30 centimeters from any surface that the ionizing radiation penetrates.

Incident
See radiological incident.

Individual
Any human being.

Individual Monitoring Devices
See Dosimetry.

Individual Monitoring Equipment
See Dosimetry.

Initial Training
Training received prior to and necessary for the individual trainee to possess the qualifications required of the employment position to be occupied. Normally this training is more extensive and more comprehensive than that considered being periodic training.

Installation
Includes all facilities utilized by Corpus Christi Army Depot and activities employed by Corpus Christi Army Depot.

Internal Audit and Inspection
A documented examination by responsible management individual(s) (e.g., Radiation Safety Officer, Alternate Radiation Safety Officer, Radiation Protection Assistant, Senior Radiographer, Supervisor, Foreman, etc.) of the ionizing radiation safety program or any element thereof (training, posting, operations, procedures, records, etc.) to verify compliance with requirements and established procedures. Internal audits and inspections are of variable scope and may include an evaluation of ionizing radiation levels at selected locations.

Internal Dose
That portion of the dose equivalent received from radioactive material taken into the body.

Internal Radiation
Ionizing radiation from a source within the body because of deposition of radionuclides in body tissues.

Ionization
Process by which a neutral atom, molecule, or ion gains or loses electrons.

Ionizing Radiation
For purposes of this Regulation, any or all of the following are ionizing radiation: alpha particles, beta particles, gamma rays, Xrays, neutrons, high-speed electrons, high-speed protons and other particles capable of producing ions; but does not include non-ionizing radiation, such as radio or microwaves, sound, nor visible, infrared, or ultraviolet light. Electromagnetic or particulate radiation capable of producing ion pairs in its passage through matter.

Isotope
Nuclides that have the same number of protons in their nuclei (the same atomic number) but different numbers of neutrons (different mass numbers).

J-Seal
For containment purposes, the procedure used for sealing a plastic bag after placement of radioactively contaminated material into the bag. Following the removal of as much air as is possible from the bag, the top of the bag is twisted many times, taped at the bottom of the twist, the twisted portion of the bag folded toward the bottom of the twist to form an inverted "J" appearance, and then taped down to form an air tight seal.

Leak Test
A test to determine if a sealed source has lost its integrity and is allowing leakage of radioactive material through holes or cracks. The test is normally performed by wiping the source with filter paper or absorbent material to determine the presence of radioactive contamination, which indicates leakage.

Lens Dose Equivalent (LDE)
Applies to the external exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 0.3 centimeter (300 mg/cm^2).

License
A license issued under the regulations in any of the applicable parts of Title 10, Code of Federal Regulations (10 CFR). See Specific License and General License.

License Exempt Item
See License Exempt Material

License-Exempt Material
Items containing radioactive material not subject to Nuclear Regulatory Commission (NRC) regulations or radioactive material exempt from licensing by the NRC as specified in 10 CFR or in a specific license issued by the NRC or state.

Licensed Material
Radioactive material (source material, special nuclear material, or by-product material) received, possessed, used, transferred, or disposed of under a general or specific license issued by the Commission.

Licensee
The holder of a license.

Limited Radiation Worker
Personnel who through the course of employment are not exposed to ionzing radiation on a routine basis.

Limits
See dose limits.

Locally Prepared Procedure
A procedure prepared at the unit level, to govern the operation for which the procedure is developed. Work Instructions, Quality Instructions, Standing Operating Procedures, etc., are considered to be locally prepared procedures.

Lost Licensed Material - Licensed material whose location is unknown. It includes material that has been shipped but has not reached its destination and whose location cannot be readily traced in the transportation system.

Lost Radioactive Material
See Lost Licensed Material and Missing Radioactive Material.

Low Level Radioactive Waste
See Radioactive Waste.

Member of the Public
An individual in a controlled or unrestricted area. However, an individual is not a member of the public during any period in which the individual receives an occupational dose.

MilliCurie (mCi)
One thousandth of a curie (3.7×10^7 disintegrations per second). Abbreviated mCi.

Minor
An individual less than 18 years old.

Missing Licensed Material
See Lost Licensed Material.

Monitoring
The measurement of ionizing radiation levels, concentrations, surface area concentrations, or quantities of radioactive material; and the use of the results of those measurements to evaluate potential exposures and doses.

Natural Thorium
Thorium with the naturally occurring distribution of thorium isotopes (essentially 100 weight percent thorium-232).

Non-Radiation Worker
Individuals who may receive very low level radiation exposure incidental to their employment at a command or activity, but not as an integral part of their skill, trade, or work assignment. See also Occupationally Exposed Personnel, Radiation Worker, and Limited Radiation Worker.

Normal Form Radioactive Material
Radioactive material that has not been demonstrated to qualify as "special form radioactive material"; e.g., if the radioactive material is not special form, then it is normal form.

NRC
The Nuclear Regulatory Commission or its duly authorized representatives. See also, Commission.

Nuclear Regulatory Commission
See NRC and Commission.

Nuclide
A general term referring to all nuclear species – both stable (about 270) and unstable (about 500) – of the chemical elements, as distinguished from the two or more nuclear species of a single chemical element which are called isotopes.

Occupancy
The type and degree that an area is occupied by personnel. The type of occupancy refers to the activity in the area such as office, berthing, utility room, or closet. The degree of occupancy is the fraction of time the area is occupied. The degree should be locally measured.

Occupational Dose
The dose received by an individual in a restricted area or in the course of employment in which the individual's assigned duties involve exposure to ionizing radiation and to radioactive material from licensed and unlicensed sources of ionizing radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background ionizing radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the general public.

Occupationally Exposed Personnel
Individuals that receive exposure to ionizing radiation in the course of their employment or duties. Occupationally exposed personnel include both radiation and non-radiation workers.

Occupational Exposure
Exposure incurred by an individual in the course of employment in which the individual's assigned duties involve exposure to ionizing radiation and to radioactive material from licensed and unlicensed sources of ionizing radiation, whether in the possession of the licensee or other person. Occupational exposure does not include exposure received from background ionizing radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the general public.

One-for-One Exchange
A term utilized to describe the method of "batch" thermoluminescent dosimeter (TLD) exchange with the RSO. This method is best described as giving a designated exposed TLD to the RSO who in return or exchange, gives back a like unexposed TLD. This process is continued until all exposed TLDs have been exchanged for unexposed TLDs.

Other Organizational Personnel
Workers obtaining indirect and/or sporadic exposure, not requiring individual exposure monitoring nor medial examination, and for whom environmental controls have been established to ensure that annual exposure does not exceed 500 mrem. Examples include persons working in areas adjacent to restricted areas or radioactive material storage areas, and persons using or working with exempt quantities of radioactive material or using or working in the vicinity of equipment established to be inherently safe or containing insignificant quantities of radioactive material such as gas chromatographs and electron beam welders.

Overexposure
See Personnel Overexposure.

Periodic Training
Training conducted on an as needed basis, dependent upon equipment or process changes dictating the need for safety related training. Otherwise considered to be training on an annual basis.

Person
(1) Any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the commission or the Department of Energy, any State or any political subdivision of or any political subdivision of any such government or nation, or other entity; and

(2) Any legal successor, representative, agent, or agency of the foregoing.

Personnel Monitoring
The use of personnel monitoring devices to measure an individual's radiation exposure from gamma, energetic beta, and X-ray sources. The standard monitoring device issued is a whole body TLD, or ring TLD bearing the individual's name, date of the monitoring period, and a unique identification number. The dosimeters are provided, processed, and reported through the U.S. Army Ionizing Radiation Dosimetry Center (USAIRDC) at Redstone Arsenal, Alabama. The USAIRDC meets or exceeds current requirements of the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NVLAP). See also Bioassay.

Personnel Monitoring Equipment
See Dosimetry.

Personnel Overexposure
An individual suspected of having received a dose in excess of the radiation dose limits established in AR 11-9 and 10 CFR (http://www.gpoaccess.gov/cfr/index.html).

Public Dose
The dose received by a member of the public from exposure to ionizing radiation and to radioactive material released by a licensee, or to another source of ionizing radiation either within a licensee's controlled area or in unrestricted areas. It does not include occupational dose or doses received from background ionizing radiation, as a patient from medical practices, or from voluntary participation in medical research programs.

Qualified Expert
A person having the knowledge and training to advise regarding ionizing radiation protection needs, to measure ionizing radiation and to evaluate safety techniques. Board certification or eligibility under the criteria established by the Board of Health Physics or American Board of Radiology is considered as prima facia evidence of such qualification.

Quarter (Calendar)
A period of time equal to one-fourth of the year observed by the licensee (approximately 13 consecutive weeks, not less than 12 weeks nor more than 14 weeks), providing that the beginning of the first quarter in a year coincides with the starting date of the year and that no day is omitted or duplicated in consecutive quarters. Not to be misconstrued with a 3-month period.

Quick-Scan Radiation Survey
A survey conducted by moving an instrument over a specific area anticipated to be the most likely source of leakage at a slow enough movement rate to allow adequate response and noting the highest reading observed.

RAD
The unit of absorbed dose equal to the absorption of energy in the amount of 100 ergs/gram or 0.01 joule/kilogram of any material. For the purpose of this Regulation, one rad is considered to be the dose delivered by one roentgen of X or gamma radiation. (1 rad = 0.01 gray).

RADIAC
RADIAC designates instrumentation used in the detection and measurement of ionizing radiation and the calibration equipment used in their support. An acronym meaning radiation detection, indication, and computation.

Radiation
See Ionizing Radiation.

Radiation Accident
See Radiological Accident.

Radiation Area
Any area accessible to individuals in which ionizing radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (5.0 mrem or 0.05 mSv) in 1 hour at 30 centimeters from the ionizing radiation source or 30 centimeters from any surface that the ionizing radiation penetrates.

Radiation Controlled Area
See Controlled Area.

Radiation Dose
See Dose.

Radiation Generating Device (RGD)
Any device or equipment capable of generating ionizing radiation when the associated control panel area is operated, but excluding devices which produce radiation only by the use of radioactive materials.

Radiation Hazard
A condition under which a person conceivably could receive radiation exposure in excess of the applicable maximum permissible exposure limits.

Radiation Incident
See Radiological Incident.

Radiation Machine
See Radiation Generating Device.

Radiation Monitoring
See Monitoring.

Radiation Protection Monitoring
See Monitoring.

Radiation Protection Survey
See Survey.

Radiation Restricted Area
See Restricted Area.

Radiation Safety Officer
See RSO.

Radiation Worker
Individuals who receive exposure to ionizing radiation in the course of their employment or duties and are identified by their command as being occupationally exposed. Normally, the individual's routine duties require working in a restricted area and directly with sources of ionizing radiation. As a result, there is a significant potential for receiving exposure. These individuals normally receive specialized training as part of a specific radiological controls program. Examples include magnesium-thorium workers, industrial x-ray radiographers, and operators of analytical x-ray equipment. See also Limited Radiation Worker.

Radioactive Commodity
An item of Government property composed in whole or in part of radioactive material, or any item that contains radioactivity equal to or in excess of limits established in reference (o), Appendix C, or contains a specific activity greater than 0.002 microcuries per gram of radioactive material and is license/NRMP exempt to the end user.

Radioactive Contamination
See Contamination.

Radioactive Device
Manufactured articles such as instruments, clocks, electron tubes, apparatus, or similar devices having radioactive materials (other than liquids) in a nondispersible form as a component part. For radioactive gases, the requirement for the radioactive material to be in a nondispersible form does not apply.

Radioactive Half-Life - The amount of time required for one-half of the atoms of an amount of radioactive material to disintegrate or decay.

Radioactive Material (RAM)
Any material or combination of materials that spontaneously emit ionizing radiation.

Radioactive Waste
Any radioactive material that meets all of the following conditions is considered to be radioactive waste.
a. material no longer needed or usable by the Army;
b. material that cannot be returned to the manufacturer;
c. material that requires controlled disposal; and
d. material that has been declared to be waste by an inventory control source.

Any of the following may be considered radioactive waste:
a. property, which has become contaminated to the extent that decontamination is uneconomical;
b. surplus radioactive material whose sale, transfer, or donation is prohibited;
c. radioactive material, which has been advertised as surplus, yet remains unwanted;
d. Waste resulting from the production, possession, or use of radioactive material and is itself radioactive.

Radioactivity
See Activity.

Radiobioassay
See Bioassay.

Radiological Accident
Any unplanned event which results in the loss of control of ionizing radiation or radioactive material, which presents a hazard to life, health, or property, or which may result in any member of the general population exceeding exposure limits for ionizing radiation.

Radiological Incident
Unplanned loss of control of ionizing radiation or radioactive material, which result in overexposures or excessive exposure levels as defined in 10 CFR 20.2202. Notification of the Nuclear Regulatory Commission is required. Notification can be either a 24-hour requirement or an immediate requirement depending upon the severity level of the incident.

Radionuclide
See Nuclide.

Rem
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).

Residual Radioactivity
Radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site because of routine or accidental releases of radioactive material at the site and previous burials at the site, even if those burials were made in accordance with the provisions of 10 CFR 20.

Restricted Area
Any area access to which is limited by the command (licensee) for protecting individuals against undue risks from exposure to ionizing radiation and radioactive material. Does not include areas used as residential quarters, however separate rooms in a residential building may be set apart as a restricted area.

Roentgen
The special unit of X-ray or gamma exposure. One roentgen produces 2.58×10^{-4} coulombs/kilogram of air.

RSO
The person designated by and responsible to the commander as the executive agent for the command's radiation safety program. The designation is made in writing and establishes a key command individual for ensuring policies are in place that will provide adequate protection from ionizing radiation and for ensuring adherence to ionizing radiation safety practices and procedures.

Self-Indicating Pocket Dosimeter (SIPD)
Intended as a secondary dosimetry device, these are self-indicating devices used to monitor exposure to gamma or X-ray radiation in situations where an immediate indication of exposure is desirable. These are pencil shaped devices containing a small ionization chamber.

Sievert
The 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.

Significant Abnormal Occurrence
An abnormal occurrence which is not reportable as an ionizing radiation incident or accident but results in evident damage or requires immediate action in the interest of safety of security. See also Abnormal Occurrence.

Source Material
Uranium or thorium material (excluding special nuclear material) or any combination of the two in any physical or chemical form or ores which contain by weight one-twentieth of one percent (0.05%) or more of uranium, thorium or any combination thereof. Source material does not include special nuclear material.

Special Form Radioactive Material
Radioactive material that satisfies the following conditions:

1. It either is a single solid piece or is contained in a sealed capsule that can be opened only by destroying the capsule;

2. The piece or capsule has at least one dimension not less than 5 mm (0.2 inches); and

3. It satisfies the qualification requirements of 10CFR71.75.

Special Nuclear Material
Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the Commission, pursuant to the provisions of Section 51 of the Act, determines to be special nuclear material, but does not include source material. Any material that has been artificially enriched such as enriched uranium-235 or plutonium-239 (excluding source material).

Specific Activity
The radioactivity of the radionuclide per unit mass of that nuclide. The specific activity of a material in which the radionuclide is essentially uniformly distributed is the radioactivity per unit mass of the material.

Specific License
A license issued by the Nuclear Regulatory Commission to persons who use radioactive materials in hospitals, universities, or industry. A Specific License requires a named responsible person, training documentation for that responsible person, specifies places of use, and designates exactly which materials may be used. Specific Licenses may be issued for individual materials (e.g., gauges) or for facility types (e.g., research). It gives the responsible person the right to procure, receive, store, transfer, use, ship, export, and/or import specified radioactive items under specific conditions.

Stocking Activity
Any activity assigned responsibility to store, maintain, or possess radioactive material.

Storage Area
An area containing radioactive material for which the entrances are labeled with signs containing the three-bladed symbol (trefoil) and the words "Caution - Radioactive Material." Signs, either permanent or temporary, shall be securely fixed to barriers, walls, doors, fences, and/or ropes.

Substantial Safety Hazard
A loss of safety function to the extent that there is a major reduction in the degree of protection provided to public health and safety from any NRC licensed activity. Examples include:

(1) Moderate exposure to or release of radioactive material; e.g., an acute personnel whole body occupational exposure exceeding 25 rem, or exceeding 0.5 rem per year in an uncontrolled area (member of the general public).

(2) Major degradation of or deficiencies in essential safety related equipment such as ionizing radiation alarm systems.

(3) Major deficiencies involving use of licensed material or facilities.

Surface Contaminated Object (SCO)
A solid object that is not itself classed as radioactive material, but which has radioactive material distributed on any of its surfaces. An SCO must be in one of two groups with surface activity not exceeding the following limits:

SCO-I – A solid object on which:

The non-fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed $1x10^{-4}$ microcurie/cm^2 (4 Bq/cm^2) for beta and gamma and low toxicity alpha emitters, or $1x10^{-5}$ micro-curie/cm^2 (0.4 Bq/cm^2) for all other alpha emitters;

The fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 1.0 microcurie/cm^2 ($4x10^4$ Bq/cm^2) for beta and gamma and low toxicity alpha emitters, or 0.1 micro-curie/cm^2 ($4x10^3$ Bq/cm^2) for all other alpha emitters; and

The non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 1.0 micro-curie/cm^2 ($4x10^4$ Bq/cm^2) for beta and gamma and low toxicity alpha emitters, or 0.1 microcurie/cm^2 ($4x10^3$ Bq/cm^2) for all other alpha emitters.

SCO-II – A solid object on which the limits for SCO-I are exceeded and on which:

The non-fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed $1x10^{-2}$ microcurie/cm^2 (400 Bq/cm^2) for beta and gamma and low toxicity alpha emitters or $1x10^{-3}$ micro-curie/cm^2 (40 Bq/cm^2) for all other alpha emitters;

The fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 20.0 microcuries/cm^2 ($8x10^5$ Bq/cm^2) for beta and gamma and low toxicity alpha emitters, or 2.0 micro-curies/cm^2 ($8x10^4$ Bq/cm^2) for all other alpha emitters; and

The non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 20.0 micro-curies/cm^2 ($8x10^5$ Bq/cm^2) for beta and gamma and low toxicity alpha emitters, or 2.0 microcuries/cm^2 ($8x10^4$ Bq/cm^2) for all other alpha emitters.

Surplus Radioactive Material
Any radioactive material that is no longer needed by a using activity. Includes radioactive sources, manufactured products containing radioactive material, and items contaminated with radioactive material.

Survey
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 ionizing radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of ionizing radiation, or concentrations or quantities of radioactive material present.

Thermoluminescent Dosimeter
See TLD.

Thermoluminescent Dosimetry
The measure of ionizing radiation using a crystalline substance (Lithium Fluoride) sensitive to ionizing radiation that when heated produces light output that is proportional to the amount of ionizing radiation exposure.

TLD (Thermoluminescent Dosimeter)
The device worn by a radiation worker housing the Lithium Fluoride (LiF) crystal substance used to measure ionizing radiation exposure. It shall be a model DT-648/PD. The LiF TLD is extremely sensitive to low level ionizing radiation exposure, including background ionizing radiation. It is capable of detecting beta, gamma, X-ray and neutron ionizing radiation. It is not effective in detecting the very low energy beta particle emitted by tritium.

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

Unrestricted Area
Any area, access to which is neither limited nor controlled by the command (licensee) for purposes of protection of individuals from exposure to radiation or radioactive materials and any area used for residential quarters.

Very High Radiation Area
An area, accessible to individuals, in which ionizing radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in 1 hour at 1 meter from an ionizing radiation source or 1 meter from any surface that the ionizing radiation penetrates. *At very high doses received at high dose rates, units of absorbed dose (e.g., rads and grays) are appropriate, rather than units of dose equivalent (e.g., rems and sieverts).*

Week
Seven consecutive days starting on Sunday.

Weighting Factor
W_T, for an organ or tissue (T) is the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly. For calculating the effective dose equivalent, the values of W_T are provided by Table 2.

Whole Body
For purposes of external exposure, the head, trunk (including male gonads), arms above the elbow, or legs above the knee.

Worker
An individual engaged in activities licensed by the Commission and controlled by a licensee, but does not include the licensee.

Year
The period of time beginning in January used to determine compliance with the provisions of licenses/permits and federal regulations. The licensee may change the starting date of the year used to determine compliance by the licensee provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.

Section III
Special Abbreviations and Terms

ARSO
Alternate Radiation Safety Officer

ALARA
As Low As Reasonably Achievable

AMCOM
U.S. Army Aviation Missile Command

AMCCOM
U.S. Army Armament Ammunitions and Chemical Command

ARA
Army Radiation Authorization

CCAD
Corpus Christi Army Depot

CCNAS
Corpus Christi Naval Air Station

DAC
Derived Air Concentration

DISREP
Discrepancy Report

DRMS
Defense and Reutilization Marketing Service

DSIRM
Directorate of Security and Industrial Risk Management

LDE
Lens Dose Equivalent

MR
milliroentgen

NRC
Nuclear Regulatory Commission

OHC
Occupational Health Clinic

PPE
Personnel Protective Equipment

RADIAC
Radiation Detection, Indication, and Computation

RGD
Radiation Generating Device

ROD
Report of Discrepancy

RSO
Radiation Safety Officer

SCBA
Self-Contained Breathing Apparatus

SCO
Surface Contaminated Object

SIPD
Self-Indicating Pocket Dosimeter

TEDE
Total Effective Dose Equivalent

TLD
Thermoluminescent Dosimeter

USAIRDC
US Army Ionizing Radiation Dosimetry Center

FEB 20 2007

DATE

This is to acknowledge the receipt of your letter/application dated 01-31-07, and to inform you that the initial processing, which includes an administrative review, has been performed.

☒ There were no administrative omissions. Your application will be assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card:

The action you requested is normally processed within 90 days.

☐ A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 471256.
When calling to inquire about this action, please refer to this mail control number.
You may call me at 817-860-8103.

Sincerely,

Colleen Monahan

Licensing Assistant

NRC FORM 532 (RIV)
(10-2006)

BETWEEN:

License Fee Management Branch, ARM
and
Regional Licensing Sections

(FOR LFMS USE)
INFORMATION FROM LTS

Program Code: 11300
Status Code: 0
Fee Category: 2C
Exp. Date: 20110228
Fee Comments: 2C IS THORIUM
Decom Fin Assur Reqd: N

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED
   Applicant/Licensee: ARMY, DEPARTMENT OF THE
   Received Date: 20070208
   Docket No: 4008177
   Control No.: 471256
   License No.: STB-1168
   Action Type: Amendment

2. FEE ATTACHED
   Amount: /
   Check No.: /

3. COMMENTS

Signed Colleen Murnahan
Date 02-15-07

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered /__/)

1. Fee Category and Amount: _____

2. Correct Fee Paid. Application may be processed for:
   Amendment _____
   Renewal _____
   License _____

3. OTHER _____
   _____

Signed _____
Date _____

From: Origin ID: CRPA (361)961-2518
Rose Ann Johnson
Corpus Christi Army Depot
308 Crecy Street
Bldg 250; Room 106
Corpus Christi, TX 78419

FedEx. Express

CL5812187/21/23

SHIP TO: (000)000-0000 **BILL SENDER**

NUCLEAR MATERIALS LICENSING BRANCH
U.S.NUCLEAR REGULATORY COMMISSION
611 RYAN PLAZA DR. STE 400
REGION IV
ARLINGTON, TX 760118064

Ship Date: 06FEB07
ActWgt: 1 LB
System#: 4245647/INET2600
Account#: S *********

Delivery Address Bar Code

Ref # LON KING
Invoice #
PO #
Dept #

RECEIVED
FEB - 8 2007
DNMS

EXPRESS SAVER PACKAGE **FRI**

Deliver By:
09FEB07

TRK# 7995 8227 5951 FORM 0201

DFW A1

76011 -TX-US

SE FWHA