

**BY ORDER OF THE COMMANDER
EDWARDS AIR FORCE BASE**

**EDWARDS AIR FORCE BASE
INSTRUCTION 40-201**



23 APRIL 2021

Medical Command

**CONSOLIDATED RADIOACTIVE
MATERIAL MANAGEMENT AND
IONIZING RADIATION PROGRAM**

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ACCESSIBILITY: Publications and forms are available for downloading or ordering on the e-Publishing website at www.e-Publishing.af.mil

RELEASABILITY: There are no releasability restrictions on this publication

OPR: 412 MDG/OMRS

Certified by: 412 MDG/CC
(Col Gwendolyn Foster)

Supersedes: EDWARDSAFBI40-201,
11 March 2014

Pages: 21

This instruction provides guidance, procedures, precautionary measures, and responsibilities for the control of ionizing radiation on Edwards Air Force Base. It implements AFMAN 40-201, *Radioactive Materials (RAM) Management*, AFI 48-148 *Ionizing Radiation Protection*, and AFMAN 48-125 *Personnel Ionizing Radiation Dosimetry*. It sets up approval and coordination procedures and gives direction for proper licensing of radioactive materials. It gives guidance for the receiving, usage, transfer, transportation, and storage of radioactive materials on Edwards AFB, excluding disaster control operations. This document applies to all assigned, attached, and associate units who possess, use, or handle sources of ionizing radiation, whether radioactive material (RAM) or ionizing producing devices (e.g. x-ray units), within the confines of Edwards AFB to include GSUs. For contracts requiring performance of such services on Edwards AFB, the requiring activity shall incorporate this instruction and its requirements within the Performance Work Statement or Statement of Work. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) AFI 33-322, *Records Management and Information Governance Program*, and disposed of IAW the Air Force Records Disposition Schedule (RDS). Send recommended changes and conflicts between this and other publications using AF Form 847, *Recommendation for Change of Publication*, to Bioenvironmental Engineering (412 OMRS/SGXB), 55 N. Wolfe Ave, Edwards AFB, CA 93524. This publication requires the collection and or maintenance of information protected by the Privacy Act (PA) of 1974. The authority to collect and or maintain the records prescribed in this publication is 10 CFR 1910.1096 implemented by DODI 6055.08 "Occupational Ionizing

Radiation Protection Program" and AFMAN 48-125 *Personnel Ionizing Radiation Dosimetry*. The applicable Privacy Act SORNs F044 AF SG O, *United States Air Force Master Radiation Exposure Registry* and F036 AF PC Q, *Personnel Data System (PDS)* are available at <http://privacy.defense.gov/notices/usaf>.

SUMMARY OF CHANGES

This document is substantially revised. Major changes include expansion of each organization's responsibilities. Range Operating Authority is a new responsible organization IAW AFMAN 40-201.

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1. General. Radioactive materials (RAM) and ionizing radiation producing devices (RPD) have many beneficial uses in industrial applications, construction, testing and research. Such materials and equipment may be directly or indirectly hazardous to personnel by virtue of their potential to cause serious biological damage to body tissues and organs and are of significant concern with respect to protection of the environment. Federal regulations set specific limits for exposure to ionizing radiation (or dose equivalent), which include keeping all exposures “As Low As Reasonably Achievable” (ALARA). When the term “installation” is used in this instruction, it includes all areas under Edwards control or jurisdiction unless otherwise noted.

2. Objective. The primary objective of this program is to support operational requirements involving the use of RAM and RPDs while minimizing health and safety risks to personnel. Specific objectives are to 1) maintain exposures to workers and the public ALARA; 2) enhance installation security and 3) ensure compliance with federal/state law and DoD/AF policy.

3. Responsibilities.

3.1. Installation Commander, or Designated Representative.

3.1.1. Appoints, in writing, a qualified Installation Radiation Safety Officer (IRSO). Requirements of this position are established in AFMAN 40-201 *Radioactive Material (RAM) Management*, and AFI 48-148 *Ionizing Radiation Protection*.

3.1.2. Establishes controls to prevent unauthorized acquisition, receipt, use, storage, transfer, transport or disposal of RAM on the installation (to include RAM used in classified operations). This policy extends to all organizations, agencies and individuals to include contractors.

3.1.3. Ensures tenant organizations and unit radiation safety programs are fully integrated into the Wing or Installation radiation safety program.

3.1.4. Delegates authority to the IRSO to suspend installation operations involving RAM or RPDs that pose a significant health risk to personnel, are in clear violation of instructions or can negatively impact AF operations, materiel or real estate.

3.1.5. Provides the IRSO with clearance and access to all activities governed by this instruction.

3.2. Wing or Organizational Commanders or Equivalent.

3.2.1. Enforce compliance with this instruction by Air Force and non-Air Force organizations to include contractors.

3.2.2. Ensure any abnormal exposures or suspected overexposures to radiation are immediately reported to the IRSO.

3.2.3. Establish controls to prevent unauthorized use or transfer of RAM within your organization (to include RAM used in classified operations)

3.2.4. Provides the IRSO with clearance and access to all activities governed by this instruction.

3.3. IRSO.

3.3.1. Serves as liaison between Edwards AFB and the USAF Radioisotope Committee in all matters pertaining to RAM or RPDs IAW 10 Code of Federal Regulations (CFR) and AFMAN 40-201. Implements and executes requirements established by AFI 48-148 and AFMAN 40-201.

3.3.2. Conducts public dose assessments and recommends controls to maintain exposures ALARA.

3.3.3. Has delegated authority from installation commander to suspend operations (including contractor operations) involving RAM or RPDs that pose a significant health risk to personnel or the public, are in clear violation of instructions or requirements, or can negatively impact AF operations, materiel or real estate.

3.3.4. Serves as Edwards AFB approval authority for contract operations involving the use of RAM or RPDs. Provides guidance to contracting officers, contract originators and contract monitors on contract material submittal requirements and procedures for operating safely on Edwards AFB.

3.3.5. Conducts installation radiation dosimetry program IAW AFI 48-148 and AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*.

3.3.6. Monitors radiation safety (i.e. ALARA) training provided annually to all organizations/personnel who use or store RAM or RPDs.

3.3.7. Assists Unit Radiation Safety Officers (URSOs) with training requirements and reviews adequacy of training plans and documentation.

3.3.8. In the event of an incident or suspect overexposure, conducts notifications IAW AFMAN 40-201 and AFI 48-148.

3.3.9. Manages tracking and closure of Nuclear Regulatory Committee (NRC) or AF Inspection Agency discrepancies.

3.3.10. Provides emergency responders (e.g. Fire Department, Emergency Management) with a list of RAM storage areas (updated annually). Out of cycle notifications are also made whenever contractors temporarily bring RAM on the installation.

3.3.11. Establishes the installation ALARA investigational levels (See [Attachment 2](#)).

3.4. **Range Operating Authority.** In addition to the requirements of AFI 13-212, *Range Planning and Operations*, paragraph 2.5.35, range authorities shall develop and implement procedures to inventory all bombing/strafing targets that potentially contain and/or are suspected to contain RAM. All RAM shall be removed from bombing/strafing targets or target materials prior to placement on a range. Use of bombing/strafing targets or target material containing RAM must be authorized by a USAF RAM Permit.

3.5. Chief of Contracting.

3.5.1. Ensures that all contracts involving RAM contain the terms and conditions the IRSO has determined must be in the contract in order to be in compliance with all applicable statutes, regulations and instructions for managing RAM in the USAF. Contracts involving use of RAM must have:

- 3.5.1.1. An NRC or Agreement State license. A copy of the NRC Form 241 must be an adjunct to the Agreement State license for those areas of exclusive Federal jurisdiction. For those areas of concurrent or proprietary jurisdiction in an agreement state, then the respective Agreement State license is a valid authorization; or
 - 3.5.1.2. A valid US Navy or Veterans Affairs (VA) RAM permit; or
 - 3.5.1.3. Written certification from DOE organizations or DOE prime contractors that they are exempt from NRC license requirements; and
 - 3.5.1.4. Written approval from the IRSO to transfer, transport, or use temporary storage areas for RAM on the installation.
 - 3.5.1.5. A clause authorizing the IRSO to suspend unsafe operations involving the use of RAM.
- 3.5.2. Ensures all solicitations for goods or services that use RAM shall contain selection criteria that will be used in making an award. Compliance with these criteria is mandatory and must receive IRSO approval of compliance before award approval.
- 3.5.3. Provides all design reviews and work order requests involving potential use, movement or disposal of RAM to the IRSO for review and approval prior to allowing work to commence on contract. Work requests without prior approval of the IRSO will be denied.
- 3.5.4. In coordination with the IRSO, and IAW the terms and conditions of the contract, suspends contractor operations that violate this instruction, a permit, or Federal regulations until corrective action is taken.
- 3.5.5. Includes FAR clause (i.e. FAR 52.223-7 Notice of Radioactive Materials) where appropriate. Consult with IRSO whenever use of RAM or RPDs is suspected or confirmed.
- 3.5.6. Requires contractors to provide their own support for federal and state regulatory compliance when using RAM or RPDs.
- 3.5.7. Requires contractors establish a health and safety plan. These procedures must be followed IAW federal or state license/permit. Remind contractors that they are solely responsible for the safety and health of their employees.
- 3.6. Logistics Readiness Squadron.**
- 3.6.1. Prepares and transports RAM shipments IAW 10 CFR 71, 49 CFR 171 and 172, and DTR DOD 4500.9-R-Part II, Cargo Movement, as applicable, and is otherwise compliant with AFMAN 40-201 paragraph 2.16.
 - 3.6.2. Ensures personnel performing transportation operations (e.g., receipt, shipment, and packaging) of RAM comply with training requirements specified in 49 CFR 172.704 and DTR DOD 4500.9-R-Part II.
 - 3.6.3. Establishes procedures, in coordination with the IRSO, for the safe movement of RAM within or on a USAF installation.

3.6.4. Shall not transfer any RAM to units on the installation without prior coordination with the installation or affected PRSO. Permitted RAM will not be transferred to any organizations without a current permit, a PRSO, or without the proper identification of radionuclides/quantities of material/devices as authorized on the permit.

3.6.5. Develops and implements procedures to prevent the inadvertent transfer of RAM/items of supply known or suspected of containing RAM through the Defense Logistics Agency, Disposition Services. Establishes procedures to notify the IRSO in the event of an incident(s) or the need to perform radiological survey(s) of items that have been identified by DRMO as having the potential to contain RAM and/or components.

3.7. **Base Civil Engineer.**

3.7.1. Immediately notifies the IRSO of damage (e.g., fire, natural disaster) to buildings or waste sites storing and/or containing RAM. This includes any incident or event where buildings or sites containing and/or storing RAM are potentially in danger and/or at risk because of their close proximity to the incident.

3.7.2. Ensures disaster emergency response plans include procedures for the theft, loss, sabotage or release of RAM. The IRSO shall be included in the development and exercise of all emergency response plans involving RAM.

3.7.3. Semi-annually provides the IRSO a list of all radio luminescent exit signs on the installation IAW AFI 40-201 paragraph 3.2.1.2.1.

3.8. **Security Forces.** Immediately notifies the IRSO of suspected, attempted or actual theft or sabotage of RAM, to include supply items containing RAM. This includes any situation where the potential for collateral damage exists due to threats in near proximity to RAM.

3.9. **Antiterrorism/Force Protection Working Group.** Shall include IRSO as a member.

3.10. **Requiring Activities/Contract Originators.**

3.10.1. Ensure provisions of **Attachment 3** and **Attachment 4** are included in Statements of Work (SOW) or Performance Work Statements (PWS) for contracts that may use Radioactive Material (RAM).

3.10.2. Coordinate with IRSO in any pre-performance conference involving contractor use of RAM. Ensure the requirements package addresses the potential for contractor use of RAM or RPDs. Coordinate with IRSO on construction projects, A&E projects and whenever the potential for contractor use of RAM or RPDs is present. Ensure the purchase request package (SOO, SOW, PWS etc.) adequately addresses contractor use of RAM or RPDs. Include a material submittal, as directed by the IRSO, for all construction contracts.

3.10.3. Review the purchase request package (SOO, SOW, PWS etc.) and determine whether or not it requires the contractor to use RAM or RPDs. Include a material submittal requirement, as directed by IRSO, for all construction contracts.

3.10.4. Limit use of RAM where feasible, consistent with AF needs. Ensure all contract statements of work requiring use of RAM or RPDs are coordinated on by the IRSO prior to implementation.

3.10.5. Whenever the Government Purchase Card (GPC) is used as the vehicle to purchase services/supplies/ construction, both Air Force and local GPC procedures shall apply (i.e. minor construction projects < \$2K require AF Form 332 coordination with Base Civil Engineering; IT equipment/services require coordination with Communications Squadron; vehicle rental/purchase authorization requires Logistics/Supply coordination)

3.11. **Unit Commanders or Permittees.** Shall follow AFMAN 40-201 in its entirety including but not limited to:

3.11.1. Ensure compliance with this instruction by all unit personnel to include contractors and conditions of USAF RAM permits and other restrictions/requirements imposed by the IRSO.

3.11.2. Ensure personnel are appropriately trained.

3.11.3. Ensure reports and records are appropriately maintained.

3.11.4. Appoint in writing Unit RSOs (URSOs) for workplaces that use, handle, or store RAM or RPDs or Generally Licensed Devices (GLDs). Ensure URSO meets requirements set by IRSO and AFI 48-148 Attachment 3. Units with GLDs will follow AFI 40-201 Attachment 3 in its entirety.

3.11.5. Contact IRSO as early as possible in the acquisition process, when use of RAM or RPDs are required to accomplish the unit mission.

3.11.6. Ensure security measures and protective controls are in place for RAM and RPDs. Procure protective equipment required by IRSO or BE for safe use of ionizing radiation. Refer questions regarding the need for specific equipment items to BE or the IRSO.

3.11.7. Ensure contract originators and contract monitors are aware of their duties in AF policy, the FAR and this instruction.

3.11.8. Ensure implementation of AF radiation dosimetry program and appoint in writing a (unit) Area Optically Stimulated Luminescence Dosimeter (OSL) Manager if any unit personnel are enrolled in the OSL program.

3.11.9. Ensure any abnormal exposure or suspected exposures to radiation are immediately reported to the IRSO.

3.11.10. Establish controls to prevent unauthorized use or transfer of RAM within your unit (to include RAM used in classified operations).

3.11.11. Ensure annual program reviews are conducted by the URSO and the IRSO is briefed.

3.12. **Bioenvironmental Engineering (BE).**

3.12.1. Determine which workplaces/personnel are occupationally exposed to ionizing radiation and require monitoring under the OSL program (e.g. likely to exceed an external dose of 100 mrem/year).

3.12.2. Enroll appropriate occupationally exposed persons in the USAF Personnel Dosimetry Program.

3.12.3. Brief personnel on the hazards of ionizing radiation and the use, care, and handling of the dosimeters at the time of initial enrollment in the program. Brief female workers in proximity to radiation sources on the hazards of radiation during pregnancy and procedures to follow if pregnant.

3.12.4. BE OSL Program Manager:

3.12.4.1. Exchanges badges and forwards them to the United State Air Force School of Aerospace Medicine Analytical Services Division (USAFSAM/OEA), Wright-Patterson, Ohio, for processing.

3.12.4.2. Prior to the exchange, provides to each area OSL monitor a copy of the area's RDL Listing 1523, **Dosimetry Assignment Data**.

3.12.4.3. With the area OSL monitor, reconciles all changes and account for all badges before the old badges are turned over to BE and before the new badges are released to the OSL monitor.

3.12.4.4. Receives, reviews, and maintains in the BE Flight office files the RDL Listings 1499-1, **Occupational Radiation Exposure Report (Current)** RDL Listings 1499-2, **Occupational Radiation Exposure Report (Summary)**, until the AF Form 1527-1, **Annual Report of Individual Exposure to Ionizing Radiation**, and AF Form 1527-2 Cumulative Report of Individual Exposure to Ionizing Radiation, if needed are received and distributed. Ensure privacy act information is safeguarded IAW AFI 33-332. BE will mark/safeguard the report/listing as FOUO-PA IAW AFI 33-332 Chapter 2 and AFI 31-401, Atch 2. Any disclosure to unauthorized personnel must be reported as PII Breach per AFI 33-332 Chapter 9.

3.12.4.5. Receives AF Form 1527 from USAFSAM for personnel enrolled in the program, forward to workplace supervisor for workers' signature. Once signed copies are received from supervisor, forward to 412th Aerospace Medicine Occupational Physician for filing in each member's Armed Forces Health Longitudinal Technology Application record.

3.12.4.6. Forwards a copy of the RDL Listings 1499-1 and 1499-2 along with the names of respective unit personnel whose optically stimulated luminescence dosimeter results exceeded abnormal exposure or overexposure action levels to the appropriate Supervisor, OSL monitor and/or URSO.

3.12.5. Performs radiation protection inspection as part of routine surveillance process per AFI 48-145, *Occupational and Environmental Health Program*.

3.13. **Permit Radiation Safety Officers (PRSO)**. Shall follow AFMAN 40-201 in its entirety to include but not limited to:

3.13.1. Are appointed in writing by the Commander, USAF Radioisotope Committee (RIC) Radioactive Materials (RAM) Permits (hereto referred to as "permit"), and approved by the RIC.

3.13.2. Follow all requirements specified in the permit.

3.13.3. Obtain training by IRSO and follow all provided instructions.

3.13.4. Maintain an inventory of calibrated radiation monitoring equipment used by your unit that allows routine radiological surveillance as well as immediate response to emergency situations unless IRSO agrees to provide such service/equipment when needed.

3.13.5. Ensure compliance with AFMAN 40-201 in their entirety when RAM is transferred or shipped.

3.13.6. Comply with the provisions of 10 CFR Part 35 if a medical permittee.

3.14. Unit Radiation Safety Officers (URSO).

3.14.1. Obtain training by IRSO or BE technician assigned by IRSO on radiation safety hazards and responsibilities.

3.14.2. Ensure all new equipment containing RAM or RPD is coordinated with the permit and IRSO.

3.14.2.1. Coordinate IRSO approval of equipment containing RAM at least 60 days prior to planned arrival on Edwards AFB. Equipment use and storage may be impacted if a permit is required and not enough time is allotted for the submission and approval.

3.14.2.2. Coordinate IRSO approval for the use of any RPD by government personnel prior to use. This includes medical, industrial and test uses.

3.14.2.3. May serve as Quality Assurance Evaluator as designated by the unit commander to monitor and ensure contractor compliance with Attachments 3 and 4 of this instruction. This pertains to industrial and medical units.

3.14.3. Ensure personnel properly use, store and exchange OSL devices in a timely manner as described by the BE OSL Program Manager.

3.14.4. If required by RAM permit or IRSO, author a workplace specific radiation safety operating instruction which includes safety controls, use of OSL's , and emergency response procedures.

3.14.5. If a medical URSO, develop operating instructions stating unique identification methods, testing procedures, pass/fail criteria, documentation (i.e., device tagging and audit outcome) and proper procedures for disposal of rejected lead protective material as described in AFI 48-148, *Ionizing Radiation Protection*.

3.14.6. Provide and record initial and annual radiation safety training to workers.

3.14.7. Immediately notify the IRSO of incidents, accidents, or unusual circumstances involving ionizing radiation sources or equipment. This includes loss or theft of sources, personal injury, etc. (The BE Primary On-Call technician can be reached through the command post after duty hours.)

3.14.8. Brief unit commander annually on radiation safety program to include procedures to maintain exposures to ALARA.

3.14.9. Ensure no RAM is shipped or accepted without proper authorization. In addition, immediately notify the IRSO upon arrival or prior to shipment to conduct leak checks (if required).

3.15. Workplace Supervisors.

- 3.15.1. Enforce this instruction and other restrictions/requirements recommended by the URSO, IRSO, or permit. For contractor personnel, notify the assigned government Quality Assurance Evaluator of any non-compliance. Do not direct the contractor.
- 3.15.2. Obtain and make available safety equipment necessary for the safe use of ionizing radiation sources and equipment.
- 3.15.3. Provide results of dosimetry measurements to workers promptly upon receipt and provide signed confirmation of receipt back to IRSO within 1 month of receipt of results. Ensure privacy act information is safeguarded IAW AFI 33-332. Supervisors will mark/safeguard the report/listing as FOUO-PA IAW AFI 33-332 Chapter 2 and AFI 31-401, Atch 2. Any disclosure to unauthorized personnel must be reported as PII Breach per AFI 33-332 Chapter 9.
- 3.15.4. Ensure initial and annual radiation safety training are provided to users of RAM and ionizing radiation producing equipment; ensure training is documented. **Provide a copy to IRSO within 1 month of completion.**
- 3.15.5. Submit requests for radioactive waste disposal to BE (412 OMRS/SGXB).
- 3.15.6. Ensure all contractors working for or in the workplace follow the contractor-specific instructions detailed in this instruction.
- 3.15.7. Ensure no RAM shipments are accepted until the IRSO/BE has confirmed that they can be accepted, they are not leaking, and they conform to Department of Transportation (DOT) regulations. (EXCEPTION: Shipping documents are not required on the base proper.)
- 3.15.8. Ensure all declared pregnant workers report to Public Health who initiates a pregnancy evaluation.

3.16. Units that Receive, Store, Ship, or Dispose of RAM.

- 3.16.1. Immediately notify IRSO with all confirmed or suspected RAM prior to accepting unless pre-coordinated through internal standard operating procedures approved by IRSO.
- 3.16.2. Follow AFMAN 40-201 in their entirety.

3.17. Area OSL Monitors.

- 3.17.1. Ensure personnel make an appointment with and report to BE Flight to enroll in the OSL program.
- 3.17.2. Notify BE OSL Program Manager by telephone or email of personnel departing Edwards AFB for deployment, permanent change of station (PCS), separation, or retirement, so clearing procedures can be accomplished.
- 3.17.3. Provide a OSL storage rack/board capable of storing OSL's for all department ionizing radiation sources.
- 3.17.4. Ensure the OSL badge, when not worn during work, is stored at the storage rack. Storage in areas other than the designated rack (for example, desk drawers, clothing, vehicle glove compartments, etc.) is prohibited as such actions may affect results.

3.17.5. Brief all personnel on the requirements of the dosimetry program and ensure personnel comply with the requirements of wearing the badge and returning the badge to the storage rack when departing the immediate work area.

3.17.6. Notify BE TLD Program Manager of any TLD wearer being employed in a second job that involves ionizing radiation.

3.17.7. Notify BE TLD Program Manager of any TLD wearer on temporary duty (TDY) that may be exposed to ionizing radiation and will require the TLD.

3.17.8. Ensure all TLDs are present and accounted for during the BE TLD Program Manager monthly/quarterly exchange. Report instances where TLDs cannot be located to the section superintendent.

3.17.9. Update the USAFSAM/OEA listing with any additions, deletions, or name changes prior to the badge exchange.

3.18. Personnel Enrolled in the TLD Program.

3.18.1. Store TLDs, when not worn, on the designated storage board with the control TLD. Storage elsewhere will affect results.

3.18.2. Wear TLDs whenever performing primary duties that may expose them to ionizing radiation. If member will be TDY performing duties that may expose them to ionizing radiation, member will contact IRSO for further instructions (AFMAN 48-125 para 7.1).

3.18.3. Wear TLD outside of normal clothing but beneath any leaded aprons or other whole body protective clothing used.

3.18.4. Do not wear TLD at any time when receiving diagnostic or therapeutic x-rays.

3.18.5. Do not hold patients during x-raying. (Family members may hold patients. If this isn't possible, then non-occupationally exposed Medical Technicians should hold the patient.)

4. Personnel Monitoring, Surveillance and As Low As Reasonably Achievable (ALARA).

4.1. This instruction describes the administrative organization for radiation safety and provides written policy and procedures to foster the ALARA concept as required by AFMAN 40-201, AFI 48-148, AFMAN 48-125, applicable sections of 10 CFR and the conditions of USAF RAM permits issued to units on Edwards AFB.

4.2. If designated by IRSO, military and government civilian employees will be placed in the USAF Personnel Dosimetry Program, which requires wearing personal dosimetry devices. They may also be required to submit bioassay specimens for laboratory analysis, or undergo lung or whole body counting. Determination of who is placed on the program is based on exposure criteria and work functions. Workers who have the potential to exceed 10 percent of established levels of dose equivalent will be enrolled in the program.

4.3. Contract personnel are monitored through their own occupational safety program unless specified in the contract and agreed/coordinated by 412 OMRS/SGXB, 412 OMRS/CC and 412 MDG/CC. See [Attachment 3](#) and [Attachment 4](#).

5. Training.

5.1. Workplace supervisors are responsible for scheduling and documenting training and maintaining records of training for each employee. Training records must be retained for at least five (5) years and must document subjects covered and dates training was provided (AFI 48-148 para 3.3.3).

5.2. The IRSO or designated representative will provide training to URSOs who then provide the required training to other employees assigned to the workplace. IRSO will provide a training outline upon request to assist URSOs with developing a workplace-specific training plan and outline.

5.3. Contractors are required to provide their own training. Contractor specifications or other appropriate documents must require contract employees who use or handle ionizing radiation sources to have appropriate training as required by state and federal requirements.

5.4. Upon request, IRSO may provide training required for sealed-source type permits and non-medical x-ray sources when resources do not exist locally to provide this training.

5.5. Training may be performed in-house by the URSO if the training plan is approved by the IRSO. **Forward a copy of training records to IRSO within 30 days after training is provided.**

6. New Equipment or Facility Requirements.

6.1. All non-medical ionizing RPDs must be evaluated by IRSO for potential hazards prior to first time use. Therefore, the user, supervisor, or URSO must send a request to IRSO at least **30 days** prior to the desired use date.

6.2. All medical ionizing radiation equipment must be evaluated by a qualified medical equipment repair center (MERC) technician or biomedical equipment technician (BMET) and potentially a Medical Physicist prior to first time use as described in AFI 48-148 and AFMAN 40-201.

6.3. Radioactive Material (RAM)/RAM Containing Devices:

6.3.1. All RAM must be either HQ USAF permitted, US Navy permitted, exempt by the Nuclear Regulatory Commission (NRC) and the RIC, or generally licensed. Furthermore, it must be approved by the IRSO prior to arrival or use on Edwards AFB. Contractors see [Attachment 3](#) and [Attachment 4](#).

6.3.2. The IRSO will provide direction based on the specific type, quantity, and use of RAM involved. Any RAM not exempt, generally licensed, or already possessing a permit will need a RIC permit prior to use on Edwards AFB. New permits generally require 60 days.

6.3.3. Provide the following information when contacting the IRSO for guidance. The IRSO will provide guidance based on AFMAN 40-201, AFI 48-148, and current policy letters.

6.3.3.1. Type and quantity of material.

6.3.3.2. Copy of permit.

6.3.3.3. Specific days and location plan to use if temporary.

6.3.3.4. Specific location/purpose of use if permanent or long-term.

6.3.3.5. Location plan to store (if applicable).

7. Reporting Accidents and Incidents. Individuals or supervisors must promptly report damage, loss, or theft of RAM sources, uncontrolled releases of RAM and actual or suspected exposures to IRSO upon discovery IAW AFMAN 40-201, *Radioactive Materials (RAM) Management*, and AFI 48-148, *Ionizing Radiation Protection*, paragraph 3.5, 4.13, 4.14, 5.2.6. A partial list of reporting criteria is as follows:

7.1. Actual or suspected exposure to external radiation in excess of 50 milliRoentgen (mR) in a single event.

7.2. Actual or suspected inhalation, ingestion, injection, or absorption of any RAM.

7.3. Observed leakage from RAM storage containers or equipment.

7.4. Any situation that violates the conditions of a USAF RAM permit or could lead to a violation.

7.5. Actual or suspected uncontrolled release of any quantity of RAM to the environment.

8. Radioactive Material Storage.

8.1. RAM and RAM waste will be stored only in areas designated by the IRSO. Guidance is provided in AFMAN 40-201, AFI 48-148 as well as USAF RAM permits and are dependent on type, quantity, and purpose of storage. New storage requests must be submitted to the IRSO at least 30 days prior to the required storage date.

8.2. More than 100 electron tubes containing exempt quantities of RAM together in one location may be considered radioactive storage. However, some electron tubes can be disposed of as normal trash. Contact the IRSO for additional information.

9. Low Level Radioactive Waste (LLRW) and Commodities Disposal.

9.1. All LLRW and commodities disposal must be controlled/managed as described by a RIC permit for a specific waste and/or AFI 40-201.

9.2. Contact IRSO any time an item suspected to contain RAM or radioactive waste is found unless IRSO approved procedures and/or a permit is already in-place.

MATTHEW W. HIGER
Brigadier General, USAF
Commander

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFPD40-1, *Aerospace Medicine Enterprise*, 6 June 2019

AFI 17-130, *Cybersecurity Program Management*, 13 February 2020

AFI 33-332, *Air Force Privacy Program*, 16 May 2011

AFMAN 40-201 *Radioactive Materials (RAM) Management*, 28 March 2019

AFMAN 48-148, *Ionizing Radiation Protection*, 20 July 2020

AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*, 9 January 2019

AFI 48-145, *Occupational and Environmental Health Program*, 11 July 2018

AFI 91-204, *Safety Investigations and Reports*, 27 April 2018

DoDM5200.01V1_AFMAN16-1404V1, *Information Security Program: Overview, Classification and Declassification*, 10 January 2021

DoDM5200.01V1_AFMAN16-1404V2, *Information Security Program: Marking of Classified Information*, 7 January 2021

DoDM5200.01V1_AFMAN16-1404V3, *Information Security Program: Protection of Classified Information*, 22 December 2020

Title 40 Code of Federal Regulation (40 CFR), *Protection of Environment*

Title 49 Code of Federal Regulation (49 CFR), *Transportation*

Title 10, Code of Federal Regulations (10 CFR), *Energy*

Adopted Forms

SF 600, *Health Record-Chronological Record of Medical Care*

RDL Listing 1523, *Dosimetry Data*

RDL Listing 1499-1, *Occupational Radiation Exposure Report (Current)*

RDL Listing 1499-2, *Occupational Radiation Exposure Report (Summary)*

NRC Form 241, *Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters.*

Prescribed Forms

Request for Template Permit Action

Abbreviations and Acronyms

ALARA—As Low As Reasonably Achievable

CFR—Code of Federal Regulations

DOE—Department of Energy

DOT—Department of Transportation

FOUO—For Official Use Only

LLRW—Low level radioactive waste

NRC—Nuclear Regulatory Commission

OSHA—Occupational Health and Safety Administration

Permit—USAF Radioisotope Committee Radioactive Material Permit

RIC—USAF Radioisotope Committee

RAM—Radioactive materials

RPD—Radiation Producing Device

RSO—Radiation Safety Officer

OSL—Optically Stimulated Luminescence Dosimeter

URSO—Unit Radiation Safety Officer

Terms

Abnormal Exposure—An exposure received in any monitoring period that, if continued at the same rate, would exceed the limits specified in 10 CFR. Determine an abnormal exposure dose equivalent by dividing the applicable (stochastic or nonstochastic) annual limit by the number of monitoring periods during the year. For stochastic exposures, an abnormal exposure is 417 millirem (mrem) [4.2 milliSievert (mSv)] for any monthly monitoring period and 50 mrem (0.5 mSv) for any quarterly monitoring period.

ALARA (As Low As Reasonably Achievable) Program—A set of management and administrative actions taken to make every reasonable effort to maintain personnel radiation exposures as far below applicable doses limits as practicable consistent with the activity undertaken.

ALARA Investigational Level—Locally established radiation exposure limits for personnel dosimetry results that are less than the Air Force established criteria used to flag exposures that are above normal, higher than expected, or could potentially result in an abnormal exposure if trends continue. Informal investigation is conducted by permit RSO to determine the specifics of the exposure, such as change in workload, tasks, or position. Results are reported to the Installation Radiation Safety Officer and Radiation Safety Committee (if established).

Area OSL Monitor—Person assigned by the unit or section responsible for enforcing Operating Instructions/Standards of the TLD program for that unit or area.

OSL—Optically Stimulated Luminescence Dosimeter —The personnel dosimeter is used to indicate a close approximation of the exposure dose to ionizing radiation to monitor exposures are maintained ALARA. The badge contains a Optically Stimulated Luminescence Dosimeter packet. The packet is exchanged monthly or quarterly depending on the area where an individual works.

Pregnant Worker Action Level—Personnel dosimetry result which, if continued for the term of pregnancy, would exceed the 500 mrem/9 month exposure limit for the fetus. This equates to approximately 55 mrem on a monthly TLD.

Attachment 2

ALARA INVESTIGATIONAL LEVELS

Table A2.1. ALARA Investigational Levels.

Exposure Type	ALARA Threshold Level
Whole Body, head/trunk; active blood forming organs; gonads	40 mrem/month 50 mrem/quarter 500 mrem/year
Extremities; shallow dose	50 mrem/quarter
<p>A. Exposures less than the ALARA Threshold Level: Except when deemed appropriate by the IRSO, no action is required.</p> <p>B. Exposures exceeding the ALARA Threshold Level: The IRSO will review the exposure of each individual whose exposure record exceeds the threshold level, conduct an investigation to determine the causes of the exposure, and make recommendations to preclude a recurrence. The IRSO will forward a letter stating the dose received and making recommendations for radiation protection to persons who exceed ALARA Level II dose limits.</p> <p>C. Investigational levels were determined by reviewing several years of OSL data. Edwards' historical OSL results hover around the limit of detection.</p>	

Attachment 3

NON-AIR FORCE ORGANIZATIONS/CONTRACTOR REQUIREMENTS

A3.1. Non-Air Force organizations/contractors performing services involving. Use of their own RAM or ionizing RPD under the auspices of their own US NRC or Agreement State License shall:

A3.1.1. Send a request to the IRSO at least **30 calendar days**, or as soon as notified/contracted if less than 30 days, before bringing/conducting operations involving RAM or RPD onto Edwards AFB. Per AFI 40-201, requests must be in writing and include:

A3.1.1.1. A brief description of the proposed activities.

A3.1.1.2. A copy of a current NRC or Agreement State license with current NRC Form 241, **Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters** specifying specific use locations. The NRC Reciprocity Form (NRC Form 241) must accompany the Agreement State license. The license must either specifically list the installation or grant approval for work at temporary job sites anywhere in the United States where the NRC or Agreement State has jurisdiction. **NOTE:** Operations on property that is not exclusive federal jurisdiction will need to pay reciprocity. Likewise, State licensees may not work on Air Force or other installations where exclusive federal jurisdiction exists unless pre-coordinated and reciprocity is paid to the NRC. **EXCEPTION:** Contractors using generally licensed materials (e.g., certain NITON Lead Paint Analyzers) and DoE or DoE prime contractors operating in accordance with 10 CFR Part 835 do not require an NRC license or NRC Form 241. However, the IRSO must receive written certification from DoE organizations or DoE prime contractors that they are exempt from NRC license requirements.

A3.1.1.3. Name, local address, and telephone number for the responsible local representative.

A3.1.1.4. Name, address, and telephone number of the permit or organization RSO named on their license.

A3.1.1.5. Copy of the Air Force contract describing work to be done at the installation and the inclusive dates of the work.

A3.1.1.6. Written authorization in the contract that the IRSO can conduct periodic assessments to ensure contractor personnel are complying with radiation safety practices to prevent exposures to USAF personnel and avoid contamination of government property. In addition, the contract should specify the IRSO must have authority to suspend contractor operations believed to be unsafe.

A3.2. Organizations who regularly perform work on Edwards AFB. Using RAM containing or RPD can perform a modified version of the above procedures if a Memorandum of Agreement or Understanding is in-place between that organization and the IRSO.

A3.3. Once approved by the IRSO, the contractor shall:

A3.3.1. Ensure they educate all personnel on correct emergency response procedures.

A3.3.2. Provide proof of certification for transportation, as requested.

A3.3.3. Remove RAM daily unless a storage location is identified by contractor, appropriately labeled/controlled by contractor, and approved by IRSO.

A3.3.4. Meet state certification requirements for all RPD on non-federal jurisdiction property.

A3.3.5. Meet all appropriate DOT, OSHA, NRC, and California occupational health requirements to include but not limited to 49 CFR, *Transportation*, 10 CFR, *Energy*, and 29 CFR *Department of Labor* and 49 CFR, *Transportation*.

Attachment 4

CONTRACTOR REQUIREMENTS UNDER AF RAM LICENSES

A4.1. This section addresses contractor organizations performing services involving. Use of RAM or ionizing radiation producing device (RPD) under the auspices of an AF permit or using AF owned equipment.

A4.2. Contractor shall. Maintain all occupational health support for employees, specifically the use of personnel dosimeters (health risk assessment measurement), except those pertaining to public dose or AF/government employee exposure, occupational health physicals, training, and personal protective equipment such as lead aprons. Exceptions may be made on a case-by-case basis when coordinated and approved by 412 AMDS/SGPB.

A4.3. Contractor shall appoint and obtain. URSO training for an individual in their organization to serve as URSO. The appointment shall be made in writing by the Squadron Commander or equivalent. Contact 412 AMDS/SGPB to obtain training materials relevant to the situation.

A4.4. Contractor will maintain a permit folder. As described in the URSO training and in USAF RAM permit. Specifically, the contractor will ensure records are maintained in an orderly fashion as required by permit and kept on hand as required by AFI 40-201, Attachment 7, and must include:

A4.4.1. Inventories with explanation for all changes between inventories.

A4.4.2. Shipment paperwork. Ensure no RAM shipments are accepted unless the IRSO has confirmed that you can accept them, they are not leaking, and they confirm to DOT regulations. (EXCEPTION: shipping documents are not required on the base proper.)

A4.4.3. Leak test results or letters referencing such results.

A4.4.4. Confirmation of annual training.

A4.4.5. Letters of Appointment for Unit and Permit RSO signed by the permit holder.

A4.5. In addition to local inspections. Air Force-level agencies must inspect permit holders for compliance with statements made in their permit application, conditions listed on the permit, Air Force directives and instructions, and applicable NRC and DOT regulations in 10 CFR and 49 CFR. The NRC may also conduct no-notice inspections and enforces administrative actions, fines, and criminal penalties against the Air Force or individuals as described in 10 CFR Part 2, Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders. Appendix C, General Statement of Policy and Procedure for NRC Enforcement Actions, describes NRC's enforcement policy and the various enforcement options NRC may exercise.

A4.6. At least one contract monitor. (an individual with oversight for the contract) will complete radiation safety officer training to ensure competence in review of permit compliance. This training may be obtained through a civilian course or the AF RSO on-line training course B6RSOM, DITIS Registration #77700150 through the Base Education Office.

A4.7. Contract monitor will. Incorporate permit requirements into contract performance audits.

A4.8. Contract monitor will ensure. All deficiencies identified by Installation or Permit RSO during annual or spot inspections are corrected within seven (7) working days.

A4.9. Contract monitor will ensure. Such deficiencies are reflected on contract performance reports.

A4.10. Contractor will support. On-site spot inspections by Installation or Permit RSO. Contractor will provide all documents requested by Installation or Permit RSO within three (3) duty days.

A4.11. Contract Monitor, contractor URSO, users, and shop supervisors will. Be available for questioning by the AF Inspector General, AF Radioisotope Committee, or Nuclear Regulatory Commission during any no-notice inspection.