

**BY ORDER OF THE COMMANDER  
AIR FORCE TECHNICAL  
APPLICATIONS CENTER**

**AIR FORCE TECHNICAL  
APPLICATIONS CENTER  
INSTRUCTION**



**48-148**

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**Aerospace Medicine**

**IONIZING RADIATION PROTECTION  
PROGRAM**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This AFTAC Instruction (AFTACI) represents an update to AFTACI 48-148, *Ionizing Radiation Protection Program* dated 20 November 2018 and implements AFMAN 48-148, *Ionizing Radiation Protection*, AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation and 91(B) Radioactive Material Safety Program*, applicable portions of DAFMAN 40-201, *Radioactive Materials (RAM) Management*, DAFMAN 48-125 *Personnel Ionizing Radiation Dosimetry*, and all RAM permits issued to AFTAC. It applies to all personnel assigned to the Air Force Technical Applications Center (AFTAC), including detachments, geographically separated units (GSU), and individual mobilization augmentees. It also applies to work units and mission partners that possess or use RAM under the AFTAC 91(b) permit. This instruction does not apply to non-ionizing radiation. This instruction discusses control of RAM including procurement, receipt, storage, use, handling, accountability, transfer, and disposal. It also provides radiation safety guidance to users of RAM on the following general radiation protection program elements: Training, Surveys and Measurements, Exposure Control and Monitoring, Emergency Planning and Incident Response, Internal and External Assessments, Communications, and Recordkeeping. Operations, activities, and procedures peculiar and unique to a particular location or mission are addressed in supplemental local Operating Instructions (OIs) or Standard Operating Procedures (SOPs) as appropriate. Ensure all records created as a result of processes prescribed in this publication are

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### ***SUMMARY OF CHANGES***

This instruction has been completely revised and should be reviewed in its entirety. This revision includes requirements in the 20 July 2020 update of AFMAN 48-148, 29 February 2024 update of DAFMAN 40-201, 27 October 2020 update of DAFMAN 48-125, 14 May 2020 update of AFI 91-108.

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## Chapter 1

### PROGRAM OVERVIEW

#### 1.1. Overview.

##### 1.1.1. AFTAC Radiation Safety Program.

1.1.1.1. Radiation Safety Culture is defined as the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment. Individuals and organizations performing regulated activities bear the primary responsibility for safety and security. The performance of individuals and organizations can be monitored and trended and, therefore, may be used to determine compliance with requirements and commitments and may serve as an indicator of possible problem areas in an organization's safety culture.

##### 1.1.2. AFTAC is committed to maintaining a positive safety culture with an emphasis on the following:

1.1.2.1. Leadership Safety Values and Actions: Leaders demonstrate a commitment to safety in their decisions and behaviors.

1.1.2.2. Problem Identification and Resolution: Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance.

1.1.2.3. Personal Accountability: All individuals take personal responsibility for safety.

1.1.2.4. Work Processes: The process of planning and controlling work activities is implemented so safety is maintained.

1.1.2.5. Continuous Learning: Opportunities to learn about ways to ensure safety are sought out and implemented.

1.1.2.6. Environment for Raising Concerns: A safety conscious work environment is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment, or discrimination.

1.1.2.7. Effective Safety Communication: Communications maintain a focus on safety.

1.1.2.8. Respectful Work Environment: Trust and respect permeate the organization.

1.1.2.9. Questioning Attitude: Individuals avoid complacency and continuously challenge existing conditions and activities to identify discrepancies that might result in error or inappropriate action.

##### 1.1.3. AFTAC Leadership Commitment and Responsibilities.

1.1.3.1. Ensure radiation safety, security and control of radioactive materials, and compliance with regulations.

1.1.3.2. Limit the use of RAM as much as possible and only using RAM when justified.

1.1.3.3. Completeness and accuracy of the radiation safety records, and all information provided to regulatory authorities.

- 1.1.3.4. Knowledge about the contents of the radioactive materials permit and application.
  - 1.1.3.5. Compliance with current regulations, the permit's operating, emergency, and security procedures, and permit conditions.
  - 1.1.3.6. Provide adequate resources (including space, equipment, personnel, and time) for the radiation protection program to ensure the public and workers are protected from radiation hazards and compliance with regulations is maintained.
  - 1.1.3.7. Ensure facility design shall be such that RAM used does not result in exposures that exceed limits.
  - 1.1.3.8. Report noncompliance or reportable events in accordance with regulations.
  - 1.1.3.9. Selection and assignment of qualified individuals to serve on the radiation safety committee, and to serve as Radiation Safety Officer (RSO) for permitted activities and confirmation the RSO has independent authority to stop unsafe operations and will be given sufficient time to fulfill radiation safety duties and responsibilities.
  - 1.1.3.10. Ensure radiation workers have adequate training.
- 1.1.4. Technical Basis of the AFTAC Radiation Safety Program.
- 1.1.4.1. Per 10CFR 20.1101(a), Standards for Protection Against Radiation: Each licensee shall develop, document, and implement a radiation protection program commensurate with the scope and extent of licensed activities and sufficient to ensure compliance with the provisions of this part.
  - 1.1.4.2. Per 10CFR 20.1101(b), Standards for Protection Against Radiation: The licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are As Low as Reasonably Achievable (ALARA).
  - 1.1.4.3. Per 10CFR20.1101(c): The licensee shall periodically (at least annually) review the radiation protection program content and implementation.
  - 1.1.4.4. Per AFMAN 48-148 paragraph 4.1.2: Commanders, Unit Radiation Safety Officers (URSO's) and workplace supervisors shall establish a radiation safety policy that defines the goals, organization, and administrative controls required for the use of Radioactive Material, and radiation producing devices, e.g., scanning electron microscope.
  - 1.1.4.5. Per AFI 91-108 paragraph 1.3.1: Limit the risk of radiation-induced effects to a reasonable level in relation to the requirements of the United States Air Force (USAF) mission, other societal or military risks, benefits gained, and economic factors.
  - 1.1.4.6. Per AFI 91-108 paragraph 1.3.2: Manage 91(b) RAM to ensure health, safety and regulatory compliance.
- 1.1.5. Radiation Safety Goals and ALARA Policy.
- 1.1.5.1. AFTAC is committed to achieving an effective ALARA Program in Accordance With (IAW) AFMAN 48-148.
  - 1.1.5.2. The overall goals of the AFTAC Radiation Protection Program are to ensure:
    - 1.1.5.2.1. All occupational exposures to ionizing radiation are ALARA.

1.1.5.2.2. Occupational ionizing radiation exposure limits are not exceeded.

## Chapter 2

### RESPONSIBILITIES

#### 2.1. The AFTAC Commander (AFTAC/CC) shall:

- 2.1.1. Serve as the Permittee on all AFTAC Radioactive Material (RAM) permits and ensure compliance with applicable Air Force, and other Federal, State, and Local directives concerning RAM, and with all permit conditions.
- 2.1.2. Maintain exposures to members of the public and workers within the levels specified in AFMAN 48-148, and ALARA.
- 2.1.3. Appoint, in writing, AFTAC Permit (primary) Radiation Safety Officer (PRSO) and Secondary (alternate) (ARSO) Radiation Safety Officer. These individuals must be qualified IAW the specifications of the Air Force Safety Center Nuclear Weapons Office (AFSEC/SEWN).
- 2.1.4. Provide sufficient resources to maintain compliance with the Permit and all applicable regulations.
- 2.1.5. Ensure adequate security controls are implemented to preclude unintentional access to radiological hazards and unwarranted RAM removal.
- 2.1.6. Ensure engineering and/or administrative controls are in place and used to limit all personnel exposures to below established limits and are ALARA.
- 2.1.7. Ensure all radiation workers are properly trained prior to using RAM.
- 2.1.8. Form and chair the AFTAC Radiation Safety Committee (RSC) and appoint suitably qualified individuals to serve as RSC members.
- 2.1.9. Ensure an annual internal audit of the AFTAC Radiation Protection Program is completed and review the results with the AFTAC RSO and the RSC.
- 2.1.10. Review and approve corrective actions identified in response to internal or external inspections.
- 2.1.11. Ensure the Installation RSO is notified before procurement of RAM.

#### 2.2. The AFTAC Radiation Safety Officer (RSO) shall: NOTE: All uses of the acronym RSO in this instruction refer to the AFTAC Permit Radiation Safety Officer.

- 2.2.1. Serve as the PRSO as described in AFMAN 48-148 and implement the AFTAC Radiation Protection Program under the authority of the AFTAC Commander.
- 2.2.2. Advise the AFTAC Commander on all significant program activities and coordinate any requests permit actions (e.g. permit amendments, renewals) with the AFTAC Commander.
- 2.2.3. Submit requests for permit amendments to AFSEC/SEWN and keep the AFTAC Commander informed on the status of amendment requests and approvals.
- 2.2.4. Ensure all AFTAC activities comply with applicable Air Force and other Federal, State and Local directives concerning RAM, and are compliant with permit conditions.

2.2.5. Coordinate AFTAC RAM activities with the Installation Radiation Safety Officer (IRSO).

2.2.5.1. Provide a copy of the RAM inventory to the IRSO when requested.

2.2.5.2. Provide copies of any Permit actions to the IRSO.

2.2.5.3. Notify the IRSO when any permitted RAM is added or removed from the AFTAC inventory.

2.2.5.4. Request personnel be added to or removed from the AF Personnel Dosimetry program through the IRSO as needed, and manage the AFTAC Dosimetry Program, including special monitoring requirements for declared pregnant workers, in coordination with the IRSO.

2.2.5.5. Notify the IRSO of any significant incidents involving RAM to include exposures above regulatory limits, unplanned releases of RAM, unanticipated exposures to personnel, any mandatory reporting event, and any other incident that may impact personnel or the environment on Patrick Space Force Base (PSFB) or Cape Canaveral Space Force Station (CCSFS).

2.2.5.6. Notify the IRSO whenever Department of Transportation (DOT)-labeled RAM packages are received at AFTAC.

2.2.5.7. Coordinate activities with permitted RAM on other host installations with local IRSO(s).

2.2.6. Training:

2.2.6.1. Determine and provide training as required for Radiation Protection Staff.

2.2.6.2. Recommend courses outside of AFTAC as necessary to meet training requirements.

2.2.6.3. Ensure all radiation workers receive initial and annual radiation safety training commensurate with their responsibilities.

2.2.6.4. Ensure all users of radiation detection equipment are trained on the characteristics, limitations, pre-use checks and proper use of the specific instruments they will be using.

2.2.6.5. Review and approve all radiation protection training materials including training conducted by RPTs.

2.2.6.6. Designate personnel authorized to ship RAM (including receipt and disposal). Ensure designated personnel maintain current training appropriate to their duties.

2.2.6.7. Ensure radiation safety training materials and completion records are maintained for 3 years or IAW AFI 33-322, *Records Management and Information Governance Program*.

2.2.6.8. Provide guidance and instruction to declared pregnant radiation workers upon request.

2.2.7. Manage the AFTAC Radiation Protection Program:

2.2.7.1. Coordinate all procurement, acceptance, transfer, transport, disposal and use of permitted RAM per the AFTAC permit.

- 2.2.7.2. Maintain command level instruction identifying radiation protection program requirements.
- 2.2.7.3. Review and provide advice to all levels on plans and modifications to facilities which may impact personnel exposure to radiation.
- 2.2.7.4. Review new uses of RAM or Radiation Producing Devices (RPD) to ensure permit compliance and refer to the RSC as appropriate.
- 2.2.7.5. Ensure assessments and surveys are conducted as needed to assess exposures.
- 2.2.7.6. Provide guidance to supervisors, users, Radiation Protection Technicians (RPTs), and Radiation Protection Liaisons (RPLs) prior to initiating new operations involving RAM.
- 2.2.7.7. Concur with RPT and RPL assignments for each unit handling RAM or RPDs.
- 2.2.7.8. Serve as the interpretive authority for permit and regulatory requirements and assist AFTAC units with developing procedures for RAM use.
- 2.2.7.9. Manage and update the AFTAC RAM inventory IAW permit requirements.
- 2.2.7.10. Assist units with establishing the required frequencies of surveys and ensuring they are performed as directed.
- 2.2.7.11. Act as the single point of contact with the Air Force Safety Center, MAJCOM Bioenvironmental Engineers (BE), and IRSOs on all radiation safety matters. Note: Radiation safety personnel at other bases or geographically separated units (GSUs) may communicate directly with the host IRSO or BE personnel, if necessary. Personnel must attempt to contact the AFTAC RSO prior to engaging with the host IRSO on non-emergency matters.
- 2.2.7.12. Manage an inventory of calibrated radiation monitoring equipment and instrument check sources for use in routine radiological surveillance and compliance surveys as well as for immediate response to emergencies.
- 2.2.7.13. Provide recommendations to field units prior to procurement and fielding of new ionizing radiation detectors to ensure the devices are appropriate for the desired use, adequate training and calibration requirements have been identified, and adequate resources have been allocated.
- 2.2.7.14. Conduct annual audits of the radiation protection program IAW applicable regulatory requirements and this instruction.
- 2.2.7.15. Inform the AFTAC Commander, the IRSO, the RSC, Supervisors and workers, as appropriate, when activities are not in compliance with applicable regulations and instructions and make recommendations to correct observed deficiencies.
- 2.2.7.16. Provide radiological emergency response guidance for radiological incidents, accidents, and nuclear alerts.
- 2.2.7.17. Ensure timely reporting of accidents or incidents involving RAM to the AFTAC Commander, IRSO and other appropriate authorities as required.

2.2.7.18. Maintain all radiation-related records and reports as required by this instruction, permits, AFIs and Federal Regulations.

2.2.7.19. Designate authorized users of RAM in writing and maintain a current list of Authorized Users. ALARA training completion letters serve as designation of new users between list updates.

2.2.7.20. Per DAFMAN 40-201, suspend any operation that poses a significant health risk to personnel or the general public, a clear violation of regulations, or a high risk of negative impact to USAF operations, material or real estate.

### **2.3. The AFTAC Radiation Safety Committee (RSC) shall:**

2.3.1. Be composed of senior management, the IRSO, the AFTAC PRSO, the AFTAC ARSO, and other individuals knowledgeable and responsible for RAM at AFTAC.

2.3.2. Evaluate the effectiveness of the AFTAC radiation protection program and the protocols for RAM use.

2.3.3. Meet at least once annually as a full committee. Additional meetings may be held as determined by the chair.

2.3.4. Be briefed by the PRSO/ARSO on the overall status of the radiation protection program including:

2.3.4.1. Quarterly radiation dosimetry data.

2.3.4.2. Significant changes in applicable radiation protection policies or procedures, including amendments or changes to the permit(s).

2.3.4.3. Internal and external assessment results and any incidents, mishaps or violations involving RAM, to ensure the causes were properly identified and appropriate corrective actions were taken.

2.3.5. Minutes will be generated for each meeting and a copy forwarded to the AFSEC/SEWN within 45 days.

2.3.6. Retain the meeting minutes for the duration of the permit.

2.3.7. Comply with additional RSC requirements as directed by the RSC Chair and should be documented in the meeting minutes or other formal documentation.

### **2.4. The AFTAC Supervisors (Squadron Commanders or equivalent) shall:**

2.4.1. Appoint at least one RPT for each location where AFTAC personnel are stationed and/or AFTAC RAM is used or stored. (**Note:** One RPT should normally be assigned by each mission area if several missions are staffed at the same location.). Notify the RSO of each new appointee.

2.4.2. Coordinate radiation safety training with the RSO for newly assigned personnel who may be occupationally exposed to radiation.

2.4.3. Inform the RSO, in writing, of any proposed changes to the RAM inventory, any proposed acquisition of new radioactive material or any generation of radioactive waste.

2.4.4. Advise the RSO of proposed changes in the use of RAM prior to implementation, and coordinate with the RSO before initiating any new activities involving RAM.

2.4.5. Ensure written operating instructions and procedures covering unit-specific activities involving RAM are created; request review and concurrence by the RSO prior to implementation.

2.4.6. Ensure the requirements of local operating instructions, radiation safety procedures, emergency response plans, and this instruction, are followed by all workers.

2.4.7. Refer newly assigned personnel and visitors requiring dosimetry to the RSO, who will coordinate with the IRSO to enter them into the dosimetry program.

2.4.8. Ensure pregnant military-member radiation workers notify Public Health of their pregnancy status and promptly refer declared pregnant personnel to the IRSO. Civilian and contractor personnel are encouraged but not required to declare a pregnancy. (See [paragraph 2.8.9.](#))

2.4.9. Ensure timely reporting of accidents or incidents involving RAM to the RSO and assist in any required investigations.

2.4.10. Provide support to the RSO, as requested, in conducting annual audits of all aspects of the AFTAC radiation protection program.

2.4.11. Implement RSO recommendations to maintain ALARA.

## **2.5. The AFTAC Radiation Protection Technicians (RPTs) shall:**

2.5.1. Complete advanced or job-specific radiation safety training as directed by the RSO.

2.5.2. Serve as the point of contact on radiation protection issues in their work area.

2.5.2.1. Will limit work activities to those for which specific training or qualifications have been completed.

2.5.2.2. Coordinate all procurement, shipment and disposal of RAM with the RSO.

2.5.2.3. Inform the RSO of changes in equipment and/or procedures involving RAM. Ensure new and updated procedures are reviewed by the RSO before implementation.

2.5.2.4. Maintain a current inventory of RAM in their work area. Verify the inventory semi-annually or as otherwise directed by the RSO.

2.5.2.5. Conduct surveys and source leak tests as directed by the RSO.

2.5.2.6. Immediately report incidents/accidents involving RAM to the RSO. This includes but is not limited to lost or missing radioactive sources, unexpected exposures, unplanned releases, improper shipments, or any other incident involving RAM.

2.5.3. Ensure compliance with this instruction and all other applicable radiation protection requirements in their area of responsibility.

2.5.4. Ensure all personnel receive initial and annual refresher ALARA training.

2.5.4.1. Provide mission-specific radiation safety training to unit personnel with RSO concurrence.

2.5.4.2. Submit a copy of the training material to the RSO for approval prior to use in training.

2.5.5. Assist in managing the local dosimetry program:

2.5.5.1. Ensure new personnel who require radiation dosimetry are entered into the AF Dosimetry Program.

2.5.5.2. Outside of AFTAC Headquarters (HQ), will contact the host BE office for dosimetry support. At HQ, they will contact the RSO.

2.5.5.3. Ensure personnel leaving the work unit are removed from the dosimetry program.

2.5.5.4. Ensure personnel properly wear and store assigned dosimeters.

2.5.5.5. Report any missing, lost, or damaged dosimeters to the RSO or IRSO.

2.5.6. Comply with all the requirements of the Radiation Worker.

## **2.6. The AFTAC Radiation Protection Liaisons (RPLs) shall:**

2.6.1. Within the limits of their training, fulfill some of the roles of RPTs at locations where AFTAC personnel are not normally stationed. They are appointed by their own Organization's management, through agreement with the AFTAC RSO.

2.6.2. Complete appropriate job-specific radiation safety training.

2.6.3. Serve as the point of contact on radiation protection issues in their work area.

2.6.3.1. Assist the RSO, as requested, in coordinating procurement, shipment, and disposal of RAM.

2.6.3.2. Inform the RSO of changes in equipment and/or procedures involving RAM.

2.6.3.3. Maintain a current inventory of RAM in their work area. Verify the inventory semi-annually or when requested by the RSO.

2.6.3.4. Conduct surveys and source leak tests as requested by the RSO.

2.6.3.5. Immediately report any incidents/accidents involving RAM to the RSO. This includes but is not limited to lost or missing radioactive sources, unexpected exposures, unplanned releases, improper shipments, or other similar incidents involving RAM.

2.6.4. Assist in managing the local dosimetry program:

2.6.4.1. Notify the RSO of personnel changes so radiation dosimetry needs can be addressed.

2.6.4.2. Ensure personnel properly wear and store assigned dosimeters.

2.6.4.3. Report any missing, lost, or damaged dosimeters to the RSO.

2.6.5. Comply with all requirements of the Radiation Worker.

## **2.7. The Radiation Workers shall:**

2.7.1. Follow applicable operating instructions, regulations, and procedures when using RAM.

2.7.2. Wear assigned personnel dosimetry when working with RAM or as directed by supervisors, RPTs or the RSO.

2.7.3. Wear appropriate protective clothing and equipment as prescribed by supervisors, procedures, or the RSO.

2.7.4. Complete initial and annual radiation protection training as directed.

- 2.7.5. Perform all work in a way that keeps radiation exposures ALARA.
- 2.7.6. Report radiological incidents/accidents and hazardous conditions immediately to their supervisors or the RSO, if appropriate.
- 2.7.7. Inform their supervisor of any changes to equipment, procedures, or other factors involving RAM which may alter the radiation safety practices or radiation levels in unrestricted areas.
- 2.7.8. Military members will notify their workplace supervisor or primary care manager upon becoming aware of pregnancy. Non-military radiation workers are encouraged to notify their workplace supervisor and are encouraged, but are not required, to formally declare their pregnancy. Declaration of pregnancy enables stricter radiation exposure limits to the pregnant worker and embryo/fetus. Instructions and guidance on this process are available from the RSO.
- 2.7.9. Follow recommendations of the RSO, IRSO, and Supervisor to maintain ALARA.

## Chapter 3

### TRAINING

#### 3.1. General.

3.1.1. Each work unit must develop and maintain a written radiological training plan covering all aspects of their use of RAM IAW AFMAN 48-148.

#### 3.2. ALARA Training:

3.2.1. All users of RAM or RPD will receive initial ALARA training and annual refresher training.

3.2.2. Annual refresher training shall be completed by the end of the month one year after the previous training. The RSO may extend the due date on an individual basis if circumstances warrant.

3.2.3. Personnel will not work with RAM until after initial radiation protection training has been accomplished.

3.2.4. Initial and annual refresher training will at a minimum:

3.2.4.1. Cover the topics as described in AFMAN 48-148.

3.2.4.2. Be appropriate to the level of potential radiation hazard.

3.2.4.3. Cover the specific radiation hazards present in the work center.

3.2.5. Additional training is required whenever there is a significant change in radiation protection requirements.

3.2.6. Radiation protection training must be documented on each individual's AF Form 55 or equivalent.

#### 3.3. RPT and RPL Training:

3.3.1. RPTs and RPLs will attend initial and refresher training which has been approved or provided by the RSO.

3.3.2. The RSO may require additional training dependent upon the RAM procedures being conducted. For example, the RSO may require additional training on instrumentation, package receipt, contamination control or other topics.

3.3.3. Will be documented on the individual's AF Form 55 or equivalent.

#### 3.4. Other Training:

3.4.1. Users of radiation detection and measurement instruments shall be trained on the use of the specific equipment prior to their first use. This training may be provided by experienced personnel proficient in the use of the equipment, must cover all applicable requirements as specified by the RSO, and must be documented on the trainee's AF Form 55 or equivalent.

3.4.2. Personnel involved in RAM transport must complete initial DOT training consistent with the extent of their duties IAW 49 CFR 171.8 and 172.700 and Defense Transportation Regulations (DTR) 4500.9-R Part II, Chapter 204, and must be approved in writing by the RSO prior to conducting their first shipment.

3.4.3. Personnel certified in RAM transport shall attend refresher training every 2 years IAW DTR 4500.9-R.3.4.4. The RSO may identify areas where visitors will require training and instruction before they enter and may require awareness briefings for non-radiation workers who enter areas where RAM is stored or used.

## Chapter 4

### DOSIMETRY

#### 4.1. General.

- 4.1.1. The IRSO manages the overall dosimetry program at each AF installation.
- 4.1.2. The AFTAC RSO assists local IRSO by evaluating need for dosimetry use by AFTAC employees and visitors and issuing IRSO-provided dosimeters to AFTAC employees, investigating elevated readings or missing dosimetry, coordinating the replacement of missing or damaged dosimeters, distributing annual dosimetry reports provided by the IRSO, and recommending dose assignments through the IRSO as appropriate.
- 4.1.3. Individuals who routinely work with or near sources of ionizing radiation may be assigned dosimetry as determined by the IRSO IAW DAFMAN 48-125.
- 4.1.4. If assigned, dosimeters shall be worn while working around sources of radiation, unless otherwise instructed by the RSO.
- 4.1.5. When not in use, dosimeters must be stored in a low-radiation environment with the “control” dosimeter.
- 4.1.6. Dosimeters should be stored in a central location, such as a dosimeter storage board.

#### 4.2. AFTAC Detachments, GSUs, and Mission Partners.

- 4.2.1. The RPT will assist the RSO and IRSO by locally managing the dosimetry program for AFTAC personnel at that location.
- 4.2.2. The RPT will coordinate with RSO and the local IRSO to identify personnel who require dose monitoring and to remove personnel from the program when needed.
- 4.2.3. Annually, the RPT will request copies of the USAFSAM Form 1527-1, *Annual Occupational Dose Record*, for all AFTAC personnel from local IRSO. Copies of the form will be forwarded to the AFTAC RSO.

#### 4.3. Visitors:

- 4.3.1. Supervisors will coordinate with the RSO, or their designee (such as the local RPT) concerning visitor access to areas where the dose limits to members of the public could be approached or exceeded.
- 4.3.2. The RSO, or designee, will assess the potential exposures of visitors to areas where RAM is stored or used and may require the use of Electronic Personal Dosimeters (EPDs). Visitors will be monitored when their potential doses may exceed 10 mrem.

#### 4.4. Reports to Workers:

- 4.4.1. Annually, the IRSO provides each monitored individual with a copy of their USAFSAM Form 1527-1. Individuals will be asked to acknowledge receipt by signing the report.
- 4.4.2. Individuals may request their current and historical radiation dose report from the IRSO at any time.

**4.5. Lost, improperly handled, or damaged dosimeters:**

4.5.1. The RSO will request a Lost Dosimeter Report or Dosimetry Abnormal Event Report, as appropriate, from the wearer, coordinated through their supervisor.

4.5.2. The RSO will assess the potential exposure to the individual and will recommend the assignment of an administrative dose through the IRSO.

4.5.3. Outside of AFTAC HQ, the RPT will work with the RSO to generate a letter to the IRSO recommending an assigned administrative dose.

## Chapter 5

### RADIATION DOSE LIMITS

#### 5.1. General guidance.

5.1.1. The dose limits to an unborn fetus for declared pregnant individuals is 5 mSv (500 millirem (mrem)) during the gestation period, with a recommendation not to exceed 0.5 mSv (50 mrem) per month.

5.1.2. In no case shall a member of the public visiting controlled areas be permitted to receive a dose that exceeds 1 mSv in a year (100 mrem in a year), as limited by DoDI 6055.08.

#### 5.2. Occupation Dose limits.

5.2.1. AFTAC will control occupational dose to adults to the following dose limits:

- 5.2.1.1. Total effective dose equivalent of 5 rem (0.05 Sv) to the whole body.
- 5.2.1.2. Lens of the eye dose equivalent of 15 rem (0.15 Sv).
- 5.2.1.3. Shallow-dose equivalent of 50 rem (0.5 Sv) to the skin of the whole body.
- 5.2.1.4. Shallow-dose equivalent of 50 rem (0.5 Sv) to the skin of any extremity.

## Chapter 6

### RADIATION PROTECTION OF THE PUBLIC

**6.1. General Guidance.** Doses to members of the public will be minimized as part of the AFTAC ALARA policy.

6.1.1. The dose in any unrestricted area will not exceed 2 mrem in any one hour or 100 mrem in a year, accounting for occupancy and use factors.

6.1.2. Surveys of unrestricted areas adjacent to radioactive source storage areas will be conducted at frequencies specified by the RSO to verify the public dose limits have not been exceeded.

6.1.3. Visitors to any restricted area must be accompanied by personnel appropriately trained in the protection and safety measures of the area.

6.1.4. Visitors must be provided with adequate information and instruction prior to entering a restricted area to ensure appropriate protection of visitors and other personnel.

6.1.5. Visitors shall not enter any area defined as a “Radiation Area” or “High Radiation Area”.

6.1.6. If an individual member of the public may have received a dose in excess of applicable limits, the IRSO must investigate immediately.

## Chapter 7

### RADIOLOGICAL SURVEYS

#### **7.1. Radiation and/or contamination surveys are required to:**

- 7.1.1. Demonstrate compliance with Air Force and federal regulations.
- 7.1.2. Evaluate the magnitude and extent of radiation levels, concentrations and quantities of radioactivity, and potential radiological hazards.

#### **7.2. General survey guidance:**

- 7.2.1. Regular surveys are required for RAM use areas and adjacent areas. The types, extent, and frequency of surveys depend on the amount of RAM present, the form of the materials (loose or sealed), and the extent of handling.
- 7.2.2. Non-routine surveys are also required when radiological conditions change (such as the receipt or movement of a source) when items are to be released from a contamination area, or in the event of an incident involving RAM.
- 7.2.3. Radiological survey frequency will be determined by the organization using RAM, with concurrence from the RSO.
- 7.2.4. Waste storage areas must be surveyed IAW 10CFR20.
- 7.2.5. All radiological surveys shall comply with the requirements of AFMAN 48-148.

#### **7.3. Radiological survey records shall include:**

- 7.3.1. A drawing/diagram/map of each measurement location.
- 7.3.2. The measured dose and/or contamination levels at each location.
- 7.3.3. The type, model number, serial number, and calibration date of the instrument.
- 7.3.4. The name of individual performing the survey.
- 7.3.5. Date of the survey and applicable comments.

## Chapter 8

### RADIOLOGICAL POSTINGS AND LABELING

#### 8.1. General Guidance.

- 8.1.1. Radioactive material use and storage areas shall be posted IAW 10CFR20.1902-1903.
- 8.1.2. Radioactive material shall be labeled with a durable, clearly visible label bearing the radiation symbol and the words: “CAUTION, RADIOACTIVE MATERIAL”.
- 8.1.3. If a label will not fit on an item of radioactive material, it may be affixed to the exterior of the item container.
- 8.1.4. Items are exempt from labeling requirements if the quantities of radioactive material are less than 10CFR20 Appendix C values.

#### 8.2. RAM label information.

- 8.2.1. RAM labels shall provide the following information to individuals who handle or use the material:
  - 8.2.1.1. Radionuclide(s).
  - 8.2.1.2. Initial radioactivity levels.
  - 8.2.1.3. Any precautionary statement for handling.

## Chapter 9

### USE OF RADIATION MEASUREMENT EQUIPMENT

#### 9.1. General Guidance.

9.1.1. Only appropriately trained personnel may use radiation measurement equipment in the performance of required surveys or measurements.

9.1.2. Instruments used to perform radiation surveys or measurements must be checked for proper operation before each use per the manufacturer's recommendations.

9.1.3. Instruments used for quantitative radiological measurements must be calibrated for the radiation measured at least annually or by manufacturer's instructions.

9.1.4. Instrument calibration records and records of surveys or other radiological measurements must be maintained for three years.

9.1.5. A copy of the calibration and survey records must be forwarded to the AFTAC/SER office.

## Chapter 10

### PROCUREMENT, RECEIPT, AND SHIPPING OF RAM

NOTE: RAM will not be purchased or transported without prior permission from the RSO.

#### 10.1. Procurement/Ordering.

10.1.1. RSO concurrence is required prior to the procurement of all RAM.

10.1.2. The RSO must review RAM procurement plans to ensure the new material is authorized under the AFTAC RAM Permit and the procuring work center has the necessary procedures and training to safely use the material.

10.1.3. Work areas receiving potentially radioactive samples will either have individual samples reviewed and approved by the RSO or will establish standard receipt procedures approved by the RSO.

10.1.4. If requesting RAM not authorized by the permit, the RSO will submit a written request to AFSEC to have the permit amended. The user will not take action to procure the material until the permit is amended.

#### 10.2. Receipt of RAM.

##### 10.2.1. General.

10.2.1.1. IAW the Permit, no external organization doing business with AFTAC may ship or transfer RAM to AFTAC or subordinate commands without prior confirmation to ship from the RSO.

10.2.1.2. The RSO must be notified as soon as practicable upon the receipt of any incoming RAM, but no later than 24 hours after receipt.

10.2.1.3. Only personnel who have been properly trained and qualified IAW DTR 4500.9-R Part II, Chapter 204, may open packages shipped as containing RAM.

10.2.1.4. In the event a package containing RAM appears to be damaged or leaking, the RSO must be contacted immediately through the AFTOC at DSN 854-4333 or commercially (321) 494-4333, irrespective of the day or time.

10.2.1.5. During duty hours, packages containing Type A quantities or greater must be inspected and opened within 3 hours of receipt. If the package is received after duty hours, it must be inspected and opened within 3 hours after the beginning of the next duty day.

10.2.1.6. Upon receipt of RAM, a package inspection and receipt will be conducted, and documentation will be forwarded to the RSO.

10.2.1.7. The RSO is required to notify the IRSO upon receipt of all labeled RAM packages.

10.2.2. Opening Packages. The following precautions must be taken when opening packages containing RAM:

10.2.2.1. Visually inspect the outside of the package and, if damaged, notify the RSO immediately.

10.2.2.2. Measure the exposure rate at the package surface and, if greater than expected or greater than the shipper's survey, contact the RSO for assistance.

10.2.2.3. Verify the package contents against the packaging slip, inventory, or Bill of Lading. Notify the RSO immediately if there is a discrepancy or if the items appear damaged.

10.2.2.4. Ensure ALARA practices are followed, and the proper personnel protective equipment (PPE) is utilized (e.g. disposable gloves), as appropriate for the type of package received. Packages containing liquids/dispersible materials should be opened in a fume hood.

10.2.2.5. Provide all documentation (including the shipping papers) to the RSO as soon as practicable.

10.2.3. Receipt documentation shall include the following, IAW the Permit:

10.2.3.1. Nuclide: If package is a sample to be processed, the nuclide may not be available. In this case, record the primary activity of emission (i.e. alpha, beta, and gamma). If the primary emission is unknown and the sample is to be analyzed later, this should be noted on the receipt documentation (e.g. "Awaiting Analysis").

10.2.3.2. Activity (in curies or becquerels): If estimated, record instrument used and assumed efficiency for the instrument. For unknown samples, the external exposure rate on contact will be recorded.

10.2.3.3. Physical form (solid, liquid, gas).

10.2.3.4. Volume or weight of material (if known).

10.2.3.5. Perform a removable contamination survey on the outside of the shipping container and on the exterior of the sample container.

10.2.3.6. Dose rates on contact with the package, at 30 cm. Other surveys may be made as appropriate.

### **10.3. Shipping.**

10.3.1. RAM may only be prepared and offered for shipment by personnel who have been trained and qualified to perform these tasks IAW DTR 4500.9-R Part II, Chapter 204.

10.3.2. The RSO must verify the training and qualifications of all personnel shipping RAM before their first shipment.

10.3.3. RAM may only be transferred to authorized recipients as listed in the permit.

10.3.4. Contractor's shipping RAM must be appropriately qualified. The RSO will verify vendor qualifications as appropriate.

10.3.5. Transport of permitted RAM must be IAW NRC, DOT and DoD regulations as stated in the applicable permit.

## Chapter 11

### RAM STORAGE AND INVENTORY

#### 11.1. RAM Storage.

- 11.1.1. RAM will be labeled as required in the permit.
- 11.1.2. Access to RAM will be controlled and limited to only those authorized users requiring access to perform their duties.
- 11.1.3. When not in use, RAM will be secured to prevent unauthorized removal or access.
- 11.1.4. RAM will only be stored in locations approved by the RSO.
- 11.1.5. RAM storage locations will be posted as required in the permit.
- 11.1.6. A source sign-in/out log will be used at all RAM storage locations to document deposits and withdrawals of RAM. Information to be recorded includes the date and time of the transaction, the person involved, the identification number and description of the material, and the location the material was moved from or to.
- 11.1.7. RAM will not be stored with any other type of hazardous materials.

#### 11.2. RAM Inventory.

- 11.2.1. The RSO maintains a master inventory for all AFTAC-owned RAM.
- 11.2.2. Radiation Protection staff will establish procedures to prevent and reconcile the loss of RAM within an area of responsibility.
- 11.2.3. Each work center will maintain an inventory of their RAM including radioactive samples. (See [paragraph 11.3.](#))
- 11.2.4. A physical inventory of RAM will be conducted and documented semi-annually, or as separately specified in the applicable permit. Units may perform inventories more frequently if desired.
- 11.2.5. Physical inventories are not required for:
  - 11.2.5.1. Materials awaiting disposal as radioactive waste.
  - 11.2.5.2. Sources installed in instruments residing at remote locations, if the user can verify the presence of the source using instrument readings. See Permit for further guidance.
- 11.2.6. The RPT will sign the inventory, noting any changes or updates, and forward to the RSO for review and concurrence.
- 11.2.7. Information on the inventory must include the following:
  - 11.2.7.1. Date inventory performed.
  - 11.2.7.2. Source manufacturer, source model, and serial number.
  - 11.2.7.3. Source radionuclide(s), original activity, and the date of original activity.

- 11.2.7.3.1. “Activation products”, “mixed fission products” and “transuranics” may be considered acceptable nomenclature if no better description is available.
- 11.2.7.4. Source location (building, room number, and permitted location number).
  - 11.2.7.4.1. Classified locations will be handled according to the AFTAC Security Classification Guide.
- 11.2.7.5. Name of individual conducting inventory.
- 11.2.7.6. The physical form of the nuclide, e.g. solid, liquid, gas.
- 11.2.7.7. Source Category code as listed on the permit.
- 11.2.7.8. Office symbol of the organization in possession of the material/source.
- 11.2.7.9. Person responsible (point of contact) for the material.
- 11.2.7.10. Signature of the AFTAC RSO certifying the accuracy of the inventory.

### **11.3. Radioactive Sample Inventory.**

- 11.3.1. Radioactive sample inventories are the responsibility of each work center.
- 11.3.2. The RSO in coordination with the AFSEC, will establish policy on when samples must be considered RAM, when they need to be added to the inventory database, and when written procedures for sample handling are required.
- 11.3.3. A physical inventory is not required for unsealed samples or tracers unless the sample activity exceeds the limits of 10CFR20 Appendix C.
- 11.3.4. Radioactive samples will be added to the AFTAC RAM inventory as appropriate before being placed in storage after analysis is complete.
- 11.3.5. The activity and isotopes in a sample must be assessed before they are archived or placed in other long-term storage.
- 11.3.6. RAM sample inventory will include the same information as in [paragraph 11.2.7](#) of this document.
- 11.3.7. Radiation Protection Staff must have local procedures for tracking unsealed RAM.
- 11.3.8. At least annually reconciliations will be made to obtain the estimate of the actual quantities of unsealed materials (samples/tracers/standards).

## Chapter 12

### LEAK TESTING AND CONTAMINATION CONTROL

#### 12.1. Sources shall be leak tested at 6-month intervals or as specified by the Permit.

12.1.1. Sealed sources must be leak tested by appropriately qualified personnel at intervals specified in the RAM permit or as directed by the RSO.

12.1.2. Leak test results will be provided to and maintained by the RSO.

12.1.3. Leak test records will be maintained for 3 years after document creation.

12.1.4. Leak test method shall be capable of detecting at least 0.005 $\mu$ Ci (185Bq) of radioactive material.

12.1.5. If contamination is detected above the acceptable limits of 0.005 $\mu$ Ci (185Bq), the source must be secured in an isolated area and the RSO must be contacted immediately.

12.1.5.1. Leaking sources will be removed from service and handled IAW DAFMAN 40-201.

12.1.6. Leaking sources will be reported to HQ AFSEC/SEWN within 10 business days.

12.1.7. Sealed sources located in areas with physical access restrictions shall be exempt from leak testing requirements during periods of restricted access.

12.1.7.1. Sealed sources will be leak tested as soon as accessible.

12.1.7.2. Sealed sources will not be placed back into service until leak tested.

12.1.8. Sealed sources in long-term storage are exempt from leak test requirements.

12.1.8.1. Sources will be leak tested before placed back into service.

12.1.8.2. Sources will not be transported until leak tested.

12.1.8.3. No source shall be stored for a period exceeding 10 years without being leak tested.

#### 12.2. Release of Potentially Contaminated Items.

12.2.1. Surveys are required prior to releasing items suspected of being contaminated. Fixed and removable surface contamination levels will be evaluated against the limits of DoDM 3145.03, Table 2 using wipes and direct surveys with appropriate detection instruments.

12.2.2. If internal contamination is suspected, further evaluation will be required prior to release. This will usually involve the use of specialized detection equipment and gamma spectroscopy under the direction of the RSO.

12.2.3. The RSO may require work areas with significant contamination control concerns to develop written contamination control procedures and routine training on those procedures.

## Chapter 13

### DISPOSAL OF RAM

#### 13.1. General Guidance.

- 13.1.1. Generation of radioactive waste will be minimized or prevented at the source.
- 13.1.2. All waste pending disposition must be inventoried and stored in a restricted area in clearly marked containers.
- 13.1.3. All waste storage areas must be surveyed IAW 10CFR20.
- 13.1.4. All RAM disposals must be approved by the RSO, and IAW DAFMAN 40-201.
- 13.1.5. The RSO will coordinate disposal requests through the IRSO to AF Radioactive Recycling and Disposal (AFRRAD) office.

#### 13.2. Decay In Storage:

- 13.2.1. Materials with a half-life of less than 120 days may be disposed of in normal trash after 10 half-lives under the following conditions:
- 13.2.2. All materials are surveyed using a portable radiation detection instrument appropriate to the types and energies of the radionuclides present and the measured amount of radioactivity from the container and contents is verified as not distinguishable from natural background.
- 13.2.3. All radiation labels and markings have been removed or obliterated.
- 13.2.4. A record of each disposal is retained for 3 years per DAFMAN 40-201.

## Chapter 14

### AUDITS, INSPECTIONS AND REVIEWS

#### 14.1. Internal Audits.

14.1.1. Annual internal audits of the AFTAC radiation protection program are required to:

14.1.1.1. Demonstrate compliance with applicable permits and regulations, and this instruction.

14.1.1.2. Identify opportunities for improvement, and correct program weaknesses.

14.1.1.3. Ensure readiness for external inspections.

14.1.2. Internal audits are led by the RSO and include reviews of radiation protection activities performed within the Radiation Safety Office, and within each unit/mission area as applicable. The RSO, or designee, will:

14.1.2.1. Plan and conduct annual audits of all aspects of the AFTAC radiation protection program. Note: Based on levels of risk and accessibility, it is recognized that, at the discretion of the RSO, not all RAM handling and storage locations may be visited each year, but all should be visited at least once every 3 years. Any locations not visited (audited) during a particular year will be identified in the annual audit report to facilitate future scheduling. Remote/virtual inspections may be conducted with AFTAC/SE approval.

14.1.2.2. Develop corrective actions and implementation schedules in response to deficiencies identified during the audit. Work with Supervisors, as appropriate, to address any mission-specific issues when corrective actions are found to fall outside the direct span of control of the Radiation Safety Office.

14.1.2.3. Track action completion status and follow up with action owners as needed to ensure deficiencies are addressed appropriately and in a timely manner.

#### 14.2. External Inspections and Reviews.

14.2.1. IAW AFI 91-108, operations under the AFTAC 91(B) RAM Permit may be inspected by the Air Force Safety Center (AFSEC/SEW) or the Air Force Inspection Agency, Medical Operations Directorate (AFIA/SG).

14.2.2. The PSFB IRSO may review the AFTAC Radiation Protection Program under AFMAN 48-148. Host Installation RSOs also have the authority to conduct reviews at bases where AFTAC stores or uses RAM.

14.2.3. The intent of external inspections and reviews is to assess compliance with the conditions of the Permit, and all applicable regulations.

14.2.4. Upon arrival at the AFTAC Headquarters Complex, representatives of external organizations wishing to inspect or review AFTAC's Radiation Protection Program will be referred to the RSO as their primary point of contact. If the PRSO is not available, then the ARSO may act on his/her behalf until they arrive.

14.2.5. Remote site RPTs may serve as the point of contact for audits or inspections but should immediately notify the RSO of the visit and ask for assistance or information if needed.

## Chapter 15

### RADIOLOGICAL EMERGENCIES

#### 15.1. General Guidance.

15.1.1. Each unit using radioactive material shall have emergency procedures relevant to the scope of the material being used. AFMAN 48-148 provides further guidance.

15.1.2. In emergency situations, notify unit leadership and the AFTAC RSO as soon as possible.

15.1.3. In emergencies applying radiation safety principles shall not induce more risk to the unit or mission.

15.1.4. Personnel responding to emergencies shall be trained and informed appropriately.

15.1.5. In a radiological emergency, priority is ALWAYS given to personnel health and safety.

15.1.6. Emergency exposure levels guidance will be IAW DoDM 3145.03 Table 3 and Table 4.

## Chapter 16

### REPORTING REQUIREMENTS

#### 16.1. General Guidance.

16.1.1. Any abnormal occurrence involving RAM must be reported immediately to the RSO who will make the appropriate notifications as required. (This includes but is not limited to lost or missing radioactive sources, unexpected exposures, unplanned releases, improper shipments, or any other incident involving RAM).

16.1.2. Any worker or representative of workers who believes a violation of federal regulations, AF instructions, or permit conditions has occurred, or any condition exists which may pose a hazard to personnel or the environment, must report such conditions to their immediate supervisor, the RSO, AFTAC Chief of Safety, or HQ AFSEC/SEWN.

## Chapter 17

### RECORDS

#### 17.1. Record retention requirements.

17.1.1. RAM inventory records must be retained for three years after creation of the document.

17.1.2. Leak test records must be retained for three years after creation of the document.

17.1.3. Radiological survey records must be retained for three years after the creation of the document.

17.1.4. RAM disposal records must be retained for three years after the creation of the document.

17.1.5. Records of training (course curricula, attendance, presentations) must be retained for three years unless otherwise specified.

17.1.6. Individual dose records shall be maintained indefinitely in the USAF MRER, maintained by USAFSAM.

17.1.7. AFTAC RSC records shall be retained for the life of the Permit.

CREIGHTON A. MULLINS, Colonel, USAF  
Commander

## Attachment 1

### GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

#### ***References***

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

AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation Safety Program*, 14 May 2020

DAFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*, 27 October 2020

DAFMAN 40-201, *Managing Radioactive Materials in the US Air Force*, 29 February 2024

AFI 33-322, *Records Management and Information Governance Program*, 28 July 2021

10CFR 20.1101 (a), (b) & (c), *Title 10, Code of Federal Regulations, Part 20, Section 1101, Subsection a through c*, 23 July 1998

10CFR20.1902-1903, *Code of Federal Regulations, Part 20, section 1902-1903*, 24 March 2021

DoDI 6055.8, *Occupational Ionizing Radiation Protection Program*, 09 April 2021

DTR 4500.9-R, *Defense Transportation Regulation Part II Cargo Movement*, 08 January 2007

DoDM 3145.03, *DoD Chemical, Biological, and Radiological (CBR) Clearance Guidance for Platforms and Materiel*, 08 May 2019

Title 10, *Code of Federal Regulations, Chapter I, Nuclear Regulatory Commission*, 01 January 2025

49CFR 171.8, *Title 49, Code of Federal Regulations, Part 171, Section 8*, 15 April 1976

49CFR 172.700, *Title 49, Code of Federal Regulations, Part 172, Section 700*, 15 May 1992

DTR 4500.9-R.3.4.4., *Defense Transportation Regulations*, 06 June 2025

DTR 4500.9-R, *Defense Transportation Regulations, Part II, Chapter 204*, 06 June 2025

#### ***Prescribed Forms***

None

#### ***Adopted Forms***

DAF Form 847, *Recommendation for Change of Publication*

AF Form 55, *Employee Safety and Health Record*

USAFSAM Form 1527-1, *Annual Occupational Dose Record*

#### ***Office Symbols***

**A6X**—AFTAC Publications and Forms Office

**AFIA/SG**—Air Force Inspection Agency Medical Operations Directorate

**AFRC**—Air Force Reserve Command

**AFRRAD**—Air Force Radioactive Recycling and Disposal Office

**AFSEC**—Air Force Safety Center

**AFTAC**—Air Force Technical Applications Center

**AFTAC/CC**—AFTAC Commander

**AFTAC/SE**—AFTAC Safety Office

**AFTAC/SER**—Radiation Protection Office

**AFIA/SG**—Air Force Inspection Agency, Medical Operations Directorate

**AFTOC**—Air Force Technical Operations Center

**AFSEC/SEW**—Air Force Safety Center

**AFSEC/SEWN**—Air Force Safety Center Nuclear Weapons Office

**AOC**—Alert Operations Center

**BE**—BioEnvironmental Office

**DoD**—Department of Defense

**DOT**—Department of Transportation

**USAF**—United States Air Force

**USAFSAM**—United States Air Force School of Aerospace Medicine

### ***Abbreviations and Acronyms***

**AEA**—Atomic Energy Act of 1954

**AFB**—Air Force Base

**AFMAN**—Air Force Manual

**AFRIMS**—Air Force Records Information Management System

**AFRRAD**—AF Radioactive Recycling and Disposal

**AFTACI**—Air Force Technical Applications Center Instruction

**ARSO**—Alternate Radiation Safety Officer

**AFTAC/RSO**—AFTAC Radiation Safety Officer

**ALARA**—As Low as Reasonably Achievable

**CCSFS**—Cape Canaveral Space Force Station

**CFR**—Code of Federal Regulations

**EPD**—Electronic Personal Dosimeter

**GSU**—Geographically Separated Unit

**HQ**—Headquarters

**IAW**—In Accordance With

**IRSO**—Installation Radiation Safety Officer

**MREM**—Millirem

**NRC**—Nuclear Regulatory Commission

**OI**—Operating Instructions

**PSFB**—Patrick Space Force Base

**PPE**—Personnel Protective Equipment

**PRSO**—Permit Radiation Safety Officer

**RAM**—Radioactive Materials Management

**RDS**—Records Disposition Schedule

**RPD**—Radiation Producing Devices

**RPL**—Radiation Protection Liaison

**RPT**—Radiation Protection Technician

**RSC**—Radiation Safety Committee

**RSO**—Radiation Safety Officer

**SOP**—Standard Operating Procedure

**SORN**—System of Record

**TLD**—Thermoluminescent Dosimeter

**URSO**—Unit Radiation Safety Officer

**US NRC**—Nuclear Regulatory Commission

**USAF MFER**—United States Air Force Master Radiation Exposure Registry

### *Terms*

**Alternate Radiation Safety Officer (ARSO)**—The individual named as Alternate RSO on the AFTAC RAM Permit, who is qualified to act as RSO when the PRSO is unavailable.

**As Low As Reasonably Achievable (ALARA)**—Acronym for “as low as is reasonably achievable” means making every reasonable effort to maintain exposures to radiation as far below applicable dose limits as is practical, consistent with the purpose for which the activity is undertaken, taking into account the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations and in relation to utilization of nuclear energy, RAM, and radiation in the public interest.

**Permit (or Primary) Radiation Safety Officer (PRSO)**—The individual named as Primary RSO on an AFTAC RAM Permit, with specific education, training, and professional experience in radiation protection practice appointed by the AFTAC/CC to manage radiation protection programs. The truncated term “RSO” refers to this person unless otherwise specified.

**Radiation Protection Staff**—Any personnel managing or performing work utilizing RAM or ionizing radiation under the authority of the AFTAC RAM Permit and AFTAC RSO.

**Radioactive Material (RAM)**—Materials whose nuclei, because of their unstable nature, decay by emission of ionizing radiation. The radiation emitted may be alpha or beta particles, gamma or X-rays, or neutrons.

**Restricted Area**—For this instruction, a restricted area is an area having access limited to protect individuals against undue risks from exposure to radiation and RAM.

**Section 91(b) Material**—RAM exempted from NRC licensing controls under Section 91(b) of the Atomic Energy Act of 1954, as amended, in the interest of national defense, under the possession of the DoD.

**Type A Package**—A packaging that, together with its radioactive contents, the requirements of 49 CFR 173.

**Unrestricted Area**—For this instruction, an unrestricted area is any area access to which is not controlled by the permittee. Generally, it is an area that is accessible to a person who is not trained to work with RAM.

**US Nuclear Regulatory Commission (NRC)**—An agency established by Title II of the Energy Reorganization Act of 1974 (Public Law 93-438) to regulate Byproduct, Source, and Special Nuclear Material as provided for by the Atomic Energy Act of 1954, as amended.

**USAF Radioactive Material Permit**—Written authorization from either the USAF Radioisotope Committee (RIC) or the Air Force Safety Center (AFSEC) for Air Force organizations to receive, possess, use, distribute, store, transport, transfer, and dispose of RAM.