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TINKER AIR FORCE BASE

TINKER AIR FORCE BASE
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IONIZING RADIATION PROTECTION

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This instruction implements Air Force Manual (AFMAN) 48-148, *Ionizing Radiation Protection,* DAFMAN 40-201, *Radioactive Materials (RAM) Management,* and DAFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*. This instruction supports and supplements Federal, State and military requirements at Tinker Air Force Base (TAFB) for protection of civilian and military personnel from ionizing radiation. It also specifies requirements to protect the general public from exposure to ionizing radiation resulting from TAFB activities. The instruction clarifies responsibilities of associated personnel, organizations, and tenants, as applicable, on TAFB. It applies to Air Force Reserve and Air National Guard units, except where noted otherwise. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s through publications/forms managers. All records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Instruction (AFI) 33-322,

Records Management and Information Governance Program, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS)**.**

(OC-ALC) This Supplement implements the revised TINKERAFBI 48-148, Ionizing Radiation Protection, 26 October 2023. It applies to all OC-ALC personnel. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW current Air Force guidance. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. This publication may not be supplemented or further implemented or extended.

(OC-ALC) Certain Tinker OC-ALC processes have the potential to involve and/or produce Radioactive Materials (RAM) or Low-Level Radioactive Waste (LLRW). OC-ALC stages RAM/LLRW at Bldg. 2137 prior to transferring to Air Force Radioactive Recycling and Disposal (AFRRAD). Coordinate with the OC-ALC Safety Office (OC-ALC/SE) RAM program manager for transitioning RAM/LLRW to this site. Some of these source items are engine components with known sources such as but not limited to Krypton 85 (Kr-85), gearbox housings, plasma nozzles, materials containing magnesium-thorium (Mg-Th), items and equipment found to contain Naturally Occurring Radioactive Material (NORM) such as stone grinding wheels and stone tops of Precision Measuring Equipment, and others as this list is for example and not all inclusive.

SUMMARY OF CHANGES

This document now reflects minor administrative changes as necessary. Further changes include listing the process of annual radiation program audits, and guidelines on the investigative action level for radiation monitoring.

(OC-ALC) This supplement reflects changes made to the parent document that incorporated paragraphs into **Chapter 3**. Paragraphs from the superseded supplement have been deleted to eliminate redundancy.

Chapter 1

RESPONSIBILITIES

1.1. Tinker Air Force Base (TAFB) Unit Commanders, Directors or Equivalent. In coordinated effort to keep radiation exposures As Low As Reasonably Achievable (ALARA) and maintain regulatory compliance, shall.

1.1.1. Appoint a qualified individual, in writing, as the Unit Radiation Safety Officer (RSO) when in possession of radioactive material (RAM) or radiation producing devices (RPDs) to act as the single focal point for the unit on radiation protection matters. **Note:** IAW AFMAN 48-148, the Installation Commander designates, in writing, an installation radiation safety officer (IRSO). The IRSO at TAFB is a Base Bioenvironmental Engineer, with additional training as an RSO.

1.1.1.1. **(Added-OC-ALC)** The written appointment of OC-ALC Unit personnel shall be kept current, and a copy sent to the OC-ALC/SE Workflow when a change occurs.

1.1.2. Ensure that the IRSO is notified of all planned uses of RAM and RPDs on the installation.

1.1.3. Contact the IRSO as early as possible in the acquisition process, whenever RAM or RPDs are required, to obtain written approval.

1.1.4. Ensure a Permit RSO is appointed and approved by the Nuclear Regulatory Commission (NRC), State of Oklahoma (State) or USAF Radioisotope Committee (RIC) to manage the radiation protection aspects associated with the use of RAM or RPDs for which a NRC, State or RIC permit or license must be or has been issued. A copy of the appointment letter along with other official permit or license correspondence will be provided to the IRSO.

1.1.5. Ensure personnel comply with accepted health precautions recommended by the 72d Medical Group.

1.1.6. Ensure that the IRSO is promptly notified of any abnormal exposures or suspected overexposures to ionizing radiation. The IRSO can be contacted by calling Bioenvironmental Engineering at 405-734-7844 during duty hours or at 405-593-7805 after hours.

1.1.7. If theft, loss, sabotage, or release of radioactive material (RAM) is suspected to have occurred, the Installation Radiation Safety Officer (IRSO) in Bioenvironmental Engineering must be notified immediately via 734-7844 (M-F 0700-1600) or via the BE on-call technician phone 405-823-3949 (after duty hours). Reports of theft or loss of RAM must be reported by the IRSO in accordance with NRC requirements in 10 CFR 20.2201, *Reports of theft or loss of licensed material*. If needed, BE will activate their appropriate nuclear and radiological accidents/incidents response checklists.

1.2. Civil Engineering (72 ABW/CE) shall.

1.2.1. Ensure all plans for modification of existing facilities or design of new facilities which involve the use of RAM or RPDs are reviewed by the IRSO/Bioenvironmental Engineering Flight (BEF) to ensure radiation issues are addressed and ALARA is considered.

1.2.2. Contact the IRSO upon the discovery or knowledge of a location that may contain radioactive waste.

1.2.3. Provide 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.

1.2.4. Provide environmental consultation to generating units, the IRSO, and the Air Force Radioactive Recycling and Disposal (AFRRAD) office on the Resource Conservation and Recovery Act (RCRA) hazardous waste requirements of radioactive mixed waste as related to the proper identification, handling, segregation, and storage of such waste.

1.2.5. Oversee compliance with installation RCRA permits, if applicable, and/or RCRA requirements for storage, treatment, and disposal of radioactive mixed waste in accordance with applicable Federal, state, AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, and local requirements, and in coordination with the IRSO and the AFRRAD office.

1.3. IRSO shall.

1.3.1. Manage the base Ionizing Radiation Safety Program and the Dosimetry Program IAW AFMAN 48-148, DAFMAN 40-201 and DAFMAN 48-125.

1.3.2. Review, approve, and oversee use of RAM and RPDs by all Air Force units, tenant organizations, and contractor operations on Tinker AFB.

1.3.3. Coordinate with and assist the Unit and Permit RSOs with compliance requirements.

1.3.4. Review all new requests for use of RAM or RPDs consistent with the As Low as Reasonably Achievable (ALARA) concept and ensure that personnel involved with the use of these materials and devices are qualified (by virtue of training, education, and experience) to use them.

1.3.5. Review and approve contractor use of RAM and provide written approval as required.

1.3.6. Conduct investigations for overexposure and suspected overexposure of employees to ionizing radiation. Establishes an investigation action level for each monitoring area in accordance with DAFMAN 48-125 and AFMAN 48-148 (default is 10% of the occupational exposure limit unless otherwise specified by the IRSO).

1.3.7. Assist local, host or tenant organizations requesting permission to use RAM that requires a permit under the Air Force Master Materials License (MML). Supports installation organizations in the application process and serves as a liaison with the Radioisotope Committee Secretariat (RICS).

1.3.8. Assist local, host or tenant organizations in coordinating RAM disposal through the AFRRAD Office.

1.3.8.1. **(Added-OC-ALC)** OC-ALC/SE is designated the OPR for the management of RAM and LLRW material for the OC-ALC.

1.3.9. Perform annual assessment for Nondestructive Inspection (NDI) shop as required by Technical Order (T.O.) 33B-1-1, *Nondestructive Inspection (NDI) Methods, Basic Theory*. Along with the unit's RSO, will review and assess the health of the unit's radiation safety program. At a minimum, facilities' design and work orders, current and new restricted areas, radiation training status, exposure controls (including dosimetry trends and results), and monitoring and surveillance (e.g., compliance and shipping surveys) activities will be reviewed IAW AFMAN 48-148 and per *Bioenvironmental Engineering Program Management Guide - Radiation Safety Program,* 1 January 2021.

1.3.10. Along with the Permit RSO, will perform an annual audit of each RAM permit on the installation. This includes reviewing a program for RAM documentation, shop personnel documentation, and a facilities inspection, and any other applicable items per the *Bioenvironmental Engineering Program Management Guide - Radiation Safety Program,* 1 January 2021.

1.3.11. Will receive radiation dosimetry listing (RDL) Listing 1499-1, *Occupational Dose Record for a Monitoring Period*, quarterly and USAFSAM Form 1527-1, *Annual Occupational Dose Record,* annually for all personnel on the Dosimetry Program. Establishes an investigation action level for each monitoring area in accordance with DAFMAN 48-125 and AFMAN 48-148 (default is 10% of the occupational exposure limit unless otherwise specified by the IRSO). The IRSO/BEF will forward copies to Unit RSOs/Supervisors, using signed receipt, for availability to employees monitored. The IRSO/BEF will receive signed copies of the USAFSAM Form 1527s back from the shop and provide copies to Occupational Medicine to be placed in the workers' medical records.

1.3.12. In accordance with DAFMAN 40-201, maintain and update, semiannually, RAM inventories in the Radioactive Material Management Information System (RAMMIS), to include NRC specifically licensed RAM, Generally Licensed Devices (GLDs), RIC permitted RAM, and any other type of RAM specified by the RIC which is utilized by Department of Defense (DoD) activities and organizations or in facilities for which the installation commander is responsible.

1.3.13. IAW DAFMAN 40-201, *Radioactive Materials (RAM) Management*, the individuals listed on the IRSO appointment letter are delegated with the authority to suspend installation operations involving RAM, lasers or other optical radiation sources that pose a significant health risk to personnel or the general public, present a clear violation of regulations or requirements, or present a high risk of negative impact to USAF operations, materiel, or real estate.

1.3.14. Briefs the Environmental, Safety and Occupational Health Council in accordance with DAFMAN 40-201.

1.4. Permit RSO shall.

1.4.1. Annually brief the permittee and IRSO on the permit radiation safety program including the program's regulatory compliance.

1.4.2. Document the annual brief with a memo or Staff Summary Sheet signed by the permittee and maintained with permit records.

1.4.3. Ensure annual training is conducted IAW 10 CFR §19.12, *Instruction to Workers*, and commensurate with the permit level of radiation risk. Implementation should follow guidance in NRC NUREG 1556, *Consolidated Guidance About Material Licenses*, for the applicable permit type. Coordinate radiation surveys and hazard evaluation activities with the IRSO.

1.4.4. Assist the permittee and IRSO to determine, report, promptly investigate and correct:

1.4.4.1. The causes, severity and results of mishaps or incidents involving ionizing radiation. 1.4.4.2. Non-compliance or other variation(s) from approved radiation safety requirements.

1.5. Unit RSO shall.

1.5.1. IAW AFMAN 48-148, para 4.1.2.2., review and update unit specific radiation safety procedures and instructions annually. This review will be performed in coordination with Unit Commanders and workplace supervisors, as needed.

1.5.2. Coordinate with the Installation and Permit RSOs as necessary to ensure a comprehensive, coordinated radiation protection program is established and maintained. This includes evaluation of radiation dosimetry results and training.

1.5.2.1. In coordination with supervisors, review and verify RDL Listing 1499-1, and USAFSAM Form 1527-1, from the IRSO.

1.5.2.2. Provide initial and annual radiation safety training to personnel. Ensure training is properly documented. This training must be documented in AF Form 55, *Employee Safety and Health Record*, or equivalent electronic record. Request assistance from the IRSO as needed.

1.5.3. Receive and ship RAMs in coordination with the IRSO, Defense Logistics Agency (DLA) RSO and/or DLA Hazardous Materials Shipping/Receiving Manager and in compliance with Department of Transportation (DoT) requirements in 49 CFR Part 173, *Shippers–General Requirements for Shipments and Packaging*.

1.5.4. Maintain an inventory of all RAM sources and RPDs for your unit.

1.5.4.1. **(Added-OC-ALC)** All transferred inventory of RAM or LLRW will be maintained using OC-ALC Form 122, Radioactive Materials Transfer Inventory. See **Attachment 2** to this Supplement.

1.5.5. Inform the BEF of any changes in equipment, operating parameters or procedures involving RAM or RPDs.

1.5.5. **(OC-ALC)** OC-ALC/SE is informed of planned changes which will affect the existing inventory and disposal status of RAM in a shop (e.g., acquisition of new workload with RAM, increase or discontinuance of workload involving RAM).

1.5.6. Report incidents, accidents and hazardous conditions promptly to BEF at 405-734-7844 during duty hours or at 405-593-7805 after hours. This includes loss or theft, abnormal exposures and suspected overexposures.

1.5.7. Forwards unit personnel's off-duty or moonlighting radiation dose records to IRSO for inclusion into the Member Radiation Exposure Record. For units without a Unit Radiation Safety Officer (URSO), see **paragraph 1.9.4**.

1.6. AFSC/PZIO shall.

1.6.1. Ensure contractors coordinate IRSO's written approval for use of ionizing radiation sources on AF installations at least 30 calendar days before bringing the materials onto the installation.

1.6.2. Monitor and review contracts on projects in which contractor(s) requires the use of devices that contain radioactive materials RAM, e.g., soil density gauges, radiography cameras, or use of RPDs, e.g., portable x-ray machines. Ensures IRSO reviews scope of work to assess radiation protection requirements prior to contractor(s) bringing RAM containing devices or RPDs onto the installation.

1.6.3. Coordinate with requiring organizations and the IRSO to ensure, as appropriate, Performance Work Statements/Statements of Work includes the requirement for the contractor to submit:

1.6.3.1. An NRC or Agreement State license. For those areas of exclusive Federal jurisdiction, a copy of both the NRC Form 241, *Report of Proposed Activities in Non-Agreement States*, Areas of Exclusive Jurisdiction or Offshore Waters, and Agreement State license must be submitted. For those areas of concurrent or proprietary jurisdiction in an agreement state, the respective Agreement State license is a valid authorization.

1.6.3.2. Written certification from Department of Energy (DOE) organizations or DOE prime contractors that they are exempt from NRC license requirements.

1.6.3.3. Written approval from the IRSO to transfer, transport, or use temporary storage areas for RAM on the installation.

1.7. Contractors shall.

1.7.1. Notify contracting officer, contract monitor or IRSO whenever the use of RAM or RPDs is anticipated.

1.7.2. Obtain written approval from the IRSO prior to bringing RAM or RPDs onto TAFB (this includes shipping, transfer, receipt, use or storage).

1.7.3. Provide information on location, description of use and duration. Specific information describing the type/isotope, quantity/activity and intensity of radiation should be included. This enables the installation to assess impacts to operations, personnel and facilities and, in the event of an accident, enables emergency responders to safely conduct operations.

1.7.4. Ensure a contractor health and safety plan is established. These procedures must be followed IAW the federal or state license/permit. Contractors are solely responsible for the safety and health of their employees. The safety plan should specify the IRSO has the authority to suspend contractor operations believed to be unsafe and promptly notify the Contracting Officer and Contracting Officer Representative.

1.7.5. Immediately contact the contracting officer and IRSO whenever their radioactive items/devices may impact Air Force (AF) operations, personnel, facilities, or real estate.

1.7.6. Contractors performing services involving the use of RAM under the auspices of their own NRC or Agreement State License shall provide a copy of the license to the IRSO. For contractors licensed by an Agreement State, a completed copy of NRC Form 241 shall be submitted to the IRSO.

1.8. DLA Disposition Services shall.

1.8.1. Immediately notify the IRSO of any suspected RAM-contaminated items.

1.8.2. Ensure the radiation detection system in place is confidence checked regularly as described by manufacturer. Inform leadership and request resources to fix any identified defects. Inform the IRSO when equipment is not functioning correctly and provide an estimated completion date for repair/replacement.

1.9. Shop Supervisors shall.

1.9.1. Ensure shop complies with radiation requirements as identified in BEF routine industrial hygiene survey.

1.9.2. Ensure Ionizing Radiation Safety (ALARA) Training (approved by BEF) is taught to new employees upon assignment to the shop. ALARA training is also required every 12 months, and when there is a significant change in duties or radiation safety requirements. Training will be documented on AF Form 55, or equivalent electronic record.

1.9.3. For personnel required to be in the TAFB Dosimetry Program:

1.9.3.1. Ensure new employees report to BEF (72 OMRS/SGXB) at Building 3334 prior to start of work that requires enrollment in the Dosimetry Program. Contact BEF at 405-734-7844 to schedule an appointment.

1.9.3.2. Ensure pregnant females report to Public Health (72 OMRS/SGXM) when pregnancy is declared.

1.9.3.3. Notify BEF as soon as possible on projected termination of worker employment for removal of the employee from the Dosimetry program.

1.9.3.4. The IRSO/BEF will forward copies of the RDL Listing 1499-1 to Unit RSOs/Supervisors, using signed receipt, for availability to employees monitored. It is the shop supervisor's responsibility to keep their employees RDL Listing 1499-1s up to one year until the employees receive their USAFSAM Form 1527-1. Unit RSOs/Supervisors will obtain signatures of employees monitored on each USAFSAM 1527-1 and return the signed forms to the IRSO/BEF.

1.9.4. Provide results of dosimetry measurements to workers promptly upon receipt and provide signed confirmation of receipt back to the IRSO.

1.9.5. For units without a URSO, provide off duty or moonlighting dosimetry data from the worker to the IRSO.

1.9.6. 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 testing (if required).

1.9.7. Submit requests for radioactive waste disposal to the IRSO. Report incidents, accidents and hazardous conditions involving ionizing radiation promptly to BEF at 405-734-7844 during duty hours or at 405-593-7805 after hours. This includes loss or theft, abnormal exposures, and suspected overexposures.

1.9.7.1. **(Added-OC-ALC)** OC-ALC/SE is the designated OPR for the management of RAM and LLRW material for OC-ALC facilities.

Chapter 2

REQUESTING AUTHORIZATIONS FOR RAM AND RPD USE

2.1. Permitted RAM Requests. Organizations on TAFB desiring to possess and use permitted RAM must possess a NRC or Agreement State License, an AF RAM permit or must submit an application to possess and use such items, in letter form, 30 calendar days before bringing the material onto the installation, to the IRSO (72 OMRS/SGXB). These applications must be used for new permits, renewals of old permits or amendments to existing permits or authorizations. This letter will contain the following:

2.1.1. The organization or unit that will use or procure the RAM or equipment.

2.1.2. The name of the supervisor and all personnel operating/using the RAM or equipment.

2.1.3. The radioisotope, its chemical and physical form, and activity (Ci, mCi, etc.)

2.1.4. A complete description of its use.

2.1.5. The location, building number, room name/number and post location (or area if post location unavailable) in which the radiological operations are to be performed and where the device or material is to be stored.

2.1.6. A complete listing of radiation monitoring equipment.

2.1.7. The radiation safety precautions and description of the potential hazards to be encountered or anticipated.

2.1.8. A detailed statement of education, training, and experience with radioisotopes of the designated individual user(s).

2.1.9. For RPDs, include its description with manufacturer; make; model; the maximum output capacity, kilovolt peak (kVp) and milliamp (mA) and estimated duration of use (daily and hourly maximums; averages for week, month or year).

2.1.10. An operating instruction (OI) regarding the unit's ALARA program signed by the Unit Commander, Directorate or Equivalent indicating senior management support to implement the ALARA philosophy.

2.1.11. Activities originating purchase requests for RAM or RPD(s) will identify the materials on the purchase request as "Contains Radioactive Material" or "Produces Radiation" as appropriate. The originator will obtain and attach the IRSO's approval.

2.1.12. Further guidance for requesting template and non-template permits can be found in DAFMAN 40-201.

2.2. Generally Licensed Devices (GLD).

2.2.1. Units shall acquire GLDs IAW DAFMAN 40-201.

2.2.2. Upon receipt of GLD, unit shall notify BEF or IRSO of possession.

2.2.3. Units are required to coordinate with BEF or IRSO for disposing of GLDs from their inventory.

Chapter 3

MANAGEMENT OF RADIOACTIVE WASTE

3.1. Management of Radioactive Waste.

3.1.1. Generation of Waste. The primary goal of all users is to minimize the accumulation of radioactive waste to those items which cannot be disposed of in any other manner. One method is to avoid combining radioactive and non-radioactive waste such as paper products and ordinary laboratory waste. Care should be exercised not to inadvertently dispose of radioactive waste without regard to proper disposal procedures.

3.1.2. Segregation. An important aspect of proper waste disposal is segregation of waste, which may involve separating:

3.1.2.1. Solids from liquids. An example would be the separation of solid check sources from liquid scintillation vials.

3.1.2.2. High activity from low activity radionuclides.

3.1.2.3. Long half-life from short half-life radionuclides. Short half-life material may be decayed in storage and subsequently disposed of as non-radioactive waste if approved by the IRSO in writing.

3.1.2.4. Different categories of material. An example would be the separation of alpha emitting material from gamma emitting material.

3.1.3. Containerization. Supervisors of units with containers of RAM (i.e., barrels, crates, drums, boxes, etc.) shall ensure that each container is labeled with the minimum:

3.1.3.1. National stock number.

3.1.3.2. Part number.

3.1.3.3. Nomenclature.

3.1.3.4. Quantity.

3.1.3.5. Radionuclide.

3.1.3.6. Activity.

3.1.3.7. **(Added-OC-ALC)** OC-ALC Units must provide detailed inventory using OC-ALC Form 122 accompanies all transferred RAM. Items containing magnesium-thorium (Mg-Th) alloys must annotate the weight of each item (e.g., gearbox housings, plasma nozzles) on the OC-ALC Form 122, *Radioactive Materials Transfer Inventory*.

3.2. Excess Waste Disposal.

3.2.1. Excess or unserviceable RAM shall be disposed of IAW DAFMAN 40-201. Supervisors, Unit RSOs and/or Permit RSOs shall contact BEF (i.e., the IRSO) to ensure safe handling and shipping meet NRC, DoT, DoD, and AF requirements.

3.2.2. Owning organizations shall provide BEF information as required in DAFMAN 40-201, Disposal by Burial or Recycling. BEF shall work with owning organizations on proper storage area(s) at their work sites as needed. Prior to BEF receiving excess radioactive waste from any unit for temporary storage, the IRSO shall verify the radioactive contents of the containers.

3.2.3. Owning organizations are responsible for all costs associated with the disposal of RAM. In most cases this will entail the cost of shipping and may be covered by the AF Radioactive Recycling and Disposal Office (AFRRAD).

3.2.4. Shop Supervisors, Unit RSOs and Permit RSOs will ensure that personnel who use or possess RAM or commodities containing RAM are aware of the process for turn-in of excess RAM.

3.2.5. The IRSO will coordinate final shipping or transfer of the excess waste with the unit supervisor when disposition or recycling instructions are received from AFRRAD.

3.3. Oklahoma City- Air Logistic Complex (OC-ALC) RAM Disposal Process.

3.3.1. OC-ALC RAM waste will be stored in Bldg. 2137 unless building is unavailable for storage. In this event, OC-ALC will notify BEF where the RAM waste will be stored.

3.3.2. OC-ALC radioactive mixed waste from thermal barrier coating plasma spray and coating removal operations will be containerized in 55 gallon drums and stored in Bldg. 810.

3.3.3. All OC-ALC shops generating RAM waste should contact the OC-ALC/SE office directly to coordinate the movement of RAM to the accumulation facility in Bldg. 2137. Plasma spray waste movement will also be coordinated through 72 ABW/CEIEC.

3.3.3.1. **(Added-OC-ALC)** OC-ALC Shops transferring RAM to the designated staging facility are responsible for organizing delivery to the site.

3.3.4. OC-ALC/SE shall communicate to the IRSO prior to Bldg. 2137 nearing capacity and initiate a request from services for AFRRAD.

3.3.5. 72 ABW/CEIEC will communicate to the IRSO prior to Bldg. 810 nearing capacity and initiate a request for services from AFRRAD.

3.3.6. The IRSO will sign and submit the request for Services form(s) to AFRRAD indicating the wastes which need disposal service. AFRRAD will communicate with IRSO to schedule services. The IRSO will communicate the scheduled service dates to OC-ALC/SE and 72 ABW/CEIEC as soon as the dates are confirmed with AFRRAD.

3.4. Defense Logistics Agency (DLA) RAM Disposal Process.

3.4.1. All DLA RAM waste is accumulated in Bldg. 11 and the South 40 area (outside) adjacent to Bldg. 1139. DLA will contact the IRSO to coordinate the movement of RAM in and out of Bldg. 11/South 40 area adjacent to Bldg. 1139 and notify the IRSO if RAM will be stored elsewhere.

3.4.2. DLA Radiation Protection Officer (RPO) shall coordinate with AFRRAD for RAM disposal.

ABIGAIL L.W. RUSCETTA, Colonel, USAF
Commander

(OC-ALC)

BRIAN R. MOORE
Brigadier General, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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

AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, 4 February 2020

AFMAN 33-322, *Records Management and Information Governance Program*, 23 March 2020, incorporating change 1, 28 July 2021

DAFMAN 40-201_DAFGM2023_01, *Radioactive Materials (RAM) Management*, 21 February 2023

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

10 CFR §19.12, *Instruction to Workers,* 1 January 2019

49 CFR Part 173, *Shippers–General Requirements for Shipments and Packaging,* 1 October 2010

NRC NUREG 1556, *Consolidated Guidance About Material*

T.O. 33B-1-1, *Non-destructive Inspection Methods, Basic Theory,* 1 January 2013

Bioenvironmental Engineering *Program Management Guide - Radiation Safety Program,* 1 January 2021

Prescribed Forms

(**Added**-**OC-ALC**) OC-ALC Form 122, *Radioactive Materials Transfer Inventory*

Adopted Forms

AF Form 55, *Employee Safety and Health Record*

AF Form 847, *Recommendation for Change of Publication*

NRC Form 241, *Report of Proposed Activities in Non-Agreement States*

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

USAFSAM Form 1527-1, *Annual Occupational Exposure History to Ionizing Radiation*

Abbreviations and Acronyms

AF—Air Force

AFI—Air Force Instruction

AFRRAD—Air Force Radioactive Recycling and Disposal Office

AFSC—Air Force Sustainment Center

ALARA—As Low As Reasonably Achievable

BEF—Bioenvironmental Engineering Flight

DLA—Defense Logistics Agency

DoD—Department of Defense

DoE—Department of Energy

DoT—Department of Transportation

GLD—Generally Licensed Device

IAW—In Accordance With

IRSO—Installation Radiation Safety Officer

KvP—Kilovolt Peak

mA—Milliamp

MML—Master Materials List

NRC—Nuclear Regulatory Commission

OC-ALC—Oklahoma City-Air Logistics Complex

OI—Operating Instruction

OPR—Office of Primary Responsibility

RAM—Radioactive Material

RCRA—Resource Conservation and Recovery Act

RDS—Records Disposition Schedule

RIC—Radioisotope Committee

RICS—Radioisotope Committee Secretariat

RPD—Radiation Producing Device

RPO—Radiation Protection Officer

RSO—Radiation Safety Officer or Radiation Protection Officer

TAFB—Tinker Air Force Base

TO—Technical Order

URSO—Unit Radiation Safety Officer

Terms

AFRRAD - Air Force Radioactive Recycling and Disposal Office—The 88th Air Base Wing, Office of Environmental Management (88 ABW/EM), Wright-Patterson Air Force Base, OH.

ALARA - As Low As Reasonably Achievable—The principle that personnel exposures must be maintained as low as possible consistent with existing technology, cost and operational requirements.

IRSO – Installation Radiation safety Officer—An individual designated by the Installation Commander to manage the base radiation safety program. This individual will usually be a bioenvironmental engineer or health physicist, if assigned, but may be a Bioenvironmental Engineering Craftsman (AFSC 4B071). This individual conducts the base- wide radiation safety program that includes surveillance of all RAMs and RPDs. The IRSO coordinates with and assists the unit, permit or license and medical facility RSOs as necessary.

Permit RSO—An individual designated by the Unit Commander, directorate or equivalent and approved by the NRC, State of Oklahoma or RIC to manage the radiation protection aspects associated with the use of RAM or RPDs for which a specific NRC, State or RIC permit or license has been issued.

Radioisotope—Radioactive isotope is an isotope of an element or atom whose number of neutrons makes the element radioactive. Radioisotopes may refer in general to materials that contain radioactive isotopes, i.e., RAM.

Dosimeter—A device that detects and measures accumulated ionizing radiation dose received by occupationally-exposed individuals.

Unit RSO—An individual designated by the Unit Commander to act as the single focal point for the unit on radiation protection matters. A Unit RSO will be appointed for each operational unit that have a radiation permit/license, have personnel on the dosimetry program, or operate RPDs. The Unit RSO may also be a permit or other RSO. This individual coordinates radiation surveys or hazard evaluation activities with the IRSO or permit/license RSO; assists in investigation of suspected or actual overexposures and performs those radiation protection duties at the unit level which are commensurate with his/her training and experience.

Attachment 2 (Added-OC-ALC)

EXAMPLE OF OC-ALC FORM 122 RADIOACTIVE MATERIALS TRANSFER INVENTORY

Figure A2.1. (OC-ALC) Example of OC-ALC Form 122, Radioactive Materials Transfer Inventory.

Radioactive Materials Transfer Inventory	**Date:** 15 Jan 2016
Organization: 123 PMXS	**WIC:** (From IH Survey Letter)
POC: John Doe	**Phone:** 123-4567
T.O #: (list applicable T.O Reference)	**Building/Post Location:** 3001/O-110

NSN	Part Number	Nomenclature	Radioisotope	Quantity	Weight of Each Item in Lbs. (Mg-Th items only)
1234-00-123-4567	12-345678	Gear Box	Mg-Th	5	30 lbs.
4321-01-234-5678	98-76543	Gap Tube	Kr-85	8	N/A
8765-01-2345678	4567X12Y34	Fuel Pump Adaptor	Mg-Th	15	4 lbs.
N/A	1020304	F4 Nozzle	Th	57	17.5 lbs. Total Weight

EXAMPLE

OC-ALC Form 122