

1 SEPTEMBER 2000



Medical Command

**MANAGING RADIOACTIVE MATERIALS IN
THE US AIR FORCE**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

NOTICE: This publication is available digitally on the AFDPO WWW site at: <http://afpubs.hq.af.mil>.

OPR: AFMOA/SGOR
(Lt Gen Paul K. Carlton, Jr.)
Supersedes AFI 40-201, 25 July 1994.

Certified by: HQ USAF/SG
(Lt Col Kristin N. Swenson)
Pages: 64
Distribution: F

This instruction implements AFD 40-2, *Radioactive Material-Non-Nuclear Weapons*. This instruction applies to Department of Defense (DoD) personnel, Department of Energy (DoE) personnel, DoE prime contractors, and other civilian contractors who bring radioactive materials onto or use radioactive materials on Air Force installations. It sets forth how Air Force employees and activities acquire, receive, store, distribute, use, transfer, or dispose of any item or part that contains radioactive material not expressly excluded in this AFI from the purview of the AFI. This AFI also prescribes how non-Air Force activities get approval to use radioactive materials on Air Force installations. Radioactive material covered by this instruction includes, without limitation, Byproduct, Source, or Special Nuclear Material, and enhanced naturally occurring or accelerator produced radioactive materials. Radioactive material not covered by this instruction includes materials transferred from the DoE to the DoD as parts of nuclear weapon systems, certain radioactive parts of weapons systems, nuclear reactor parts and fuel controlled under Section 91b of the Atomic Energy Act (AEA), and DoE activities related to SAFE HAVEN requirements (see AFI 91-109). Persons subject to the Uniform Code of Military Justice (UCMJ) who violate requirements and prohibitions or deviate from standards contained in this AFI are subject to punishment under UCMJ, Article 92, for failure to obey an order or regulation, or for dereliction of duty. Civilian AF employees are subject to administrative disciplinary action, in addition to any applicable criminal or civil sanctions for the violation of requirements and prohibitions contained in this AFI. This instruction complies with the Privacy Act of 1974. The authority to collect and keep the information required by this instruction is in Title 5 United States Code (5 U.S.C.) 552a (Public Law 93-579), DoD Directive 5400.11, and AFI 33-332, *Air Force Privacy Act Program*. Manage and dispose of records created as a result of prescribed processes in accordance with AFMAN 37-139, *Records Disposition Schedule*. Send comments and suggested improvements on AF Form 847, **Recommendation for Change of Publication**, through channels, to AFMOA/SGOR, 110 Luke Ave, Room 405, Bolling AFB DC 20332-7050.

SUMMARY OF REVISIONS

This revision implements a stream-lined permit application process for certain items containing radioactive material; deletes requirement for a Certification of Duty to Report; clarifies responsibility for managing radioactive waste disposal and extensively revises requirements for managing and remediating past radioactive waste burial sites and contaminated sites; deletes provision for a Consolidated Radioactive Waste Storage Facility; adds a requirement for a dedicated check source for radiation survey meters; incorporates, and where appropriate, supersedes guidance contained in Air Force Technical Orders (TO) 00-110N-2, *Radioactive Waste Disposal*; 00-110N-3, *Requisition, Handling, Storage, and Identification of Radioactive Material*; 00-110N-4, *Acquisition, Use, Storage, and Disposition of Nuclear Source Material*; 00-110N-7, *Handling and Disposition of Radioactive Electron Tubes and Spark Gaps*; incorporates a streamlined template permitting process; clarifies the exemption from the need for a permit for certain small quantities of radioactive material; clarifies training and experience requirements for medical users, and the United States Air Force Radioisotope Committee’s authority to waive any requirement of this Air Force Instruction. The revision also makes various administrative changes.

Chapter 1— RESPONSIBILITIES 5

- 1.1. Deputy Assistant Secretary of the Air Force (Environment Safety and Occupational Health). SAF/MIQ: 5
- 1.2. Surgeon General. HQ USAF/SG: 5
- 1.3. Undersecretary of the Air Force for Acquisition SAF/AQ: 5
- 1.4. Deputy Chief of Staff for Plans and Operations. HQ USAF/XO: 5
- 1.5. Deputy Chief of Staff for Installations and Logistics. HQ USAF/IL: 5
- 1.6. Commander, Air Force Medical Operations Agency, AFMOA/CC: 5
- 1.7. The Air Force Inspection Agency, Medical Inspection Division. AFIA/SG: 6
- 1.8. Air Force Safety Center, Division of Weapons, Space, and Nuclear Safety. AFSC/SEW: 6
- 1.9. Director of Civil Law, Air Force Legal Services Agency. AFLSA/JAC: 7
- 1.10. Director, AF Institute for Environment, Safety, and Occupational Health Risk Assessment (AFIERA): 7
- 1.11. US Air Force Radioisotope Committee (USAF RIC): 7
- 1.12. USAF Radioisotope Committee Secretariat. AFMOA/SGOR, acting for the RIC: . 8
- 1.13. Commander, Air Force Materiel Command, AFMC/CC. 9
- 1.14. System Program Managers, Material Group Managers, Product Group Managers, Contracting Officers and others responsible for acquisitions must: 9
- 1.15. USAFE Preventive Medicine Flight (86 MDSS/SGS (TPMF)): 10
- 1.16. Installation Commanders. 10
- 1.17. Commanders. 11

| | |
|---|---------------|
| AFI40-201 1 SEPTEMBER 2000 | 3 |
| 1.18. Chairperson of the Permit Radiation Safety Committee (RSC). | 12 |
| 1.19. Permit Radiation Safety Committee (RSC): | 12 |
| 1.20. Installation Staff Judge Advocates (SJA): | 13 |
| 1.21. Installation Radiation Safety Officer (RSO): | 13 |
| 1.22. Permittee. | 15 |
| 1.23. Permit Radiation Safety Officer (RSO). | 15 |
| 1.24. Workers. | 16 |
| Chapter 2— REGULATORY AUTHORITY FOR RADIOACTIVE MATERIALS | 17 |
| 2.1. Source of Authority | 17 |
| 2.2. Resource Conservation and Recovery Act (RCRA). | 17 |
| 2.3. Clean Air Act. | 17 |
| 2.4. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): | 18 |
| 2.5. Emergency Planning and Community-Right-To-Know-Act (EPCRA): | 18 |
| 2.6. Other Programs. | 18 |
| Chapter 3— PROGRAM ELEMENTS | 19 |
| 3.1. Prohibitions and Special Requirements for Accepting or Using Radioactive Materials. | 19 |
| 3.2. Procuring Radioactive Materials | 20 |
| 3.3. Requirements for a Permit or License: | 20 |
| 3.4. Getting Permits, Amendments, and Other Authorizations for Radioactive Materials Use. | 21 |
| 3.5. Posting Notices to Workers. | 24 |
| 3.6. Control of Radioactive Material. | 25 |
| 3.7. Transferring Permitted Radioactive Material. | 25 |
| 3.8. Transporting Radioactive Material. | 26 |
| 3.9. Managing and Securing Radioactive Waste and Excess Materials. | 27 |
| 3.10. Managing and Remediating Low Level Radioactive Waste Burial Sites. | 27 |
| 3.11. Reporting Radioactive Materials Incidents and Accidents. | 29 |
| 3.12. Response to Radioactive Materials Incidents and Accidents. | 30 |
| 3.13. Investigating Radioactive Materials Incidents and Accidents. | 31 |
| 3.14. Disposing of license or permit exempt Radioactive Material. | 31 |

| | |
|--|-----------|
| 3.15. Terminating Permits. | 32 |
| 3.16. Retaining Records. | 33 |
| 3.17. Inspecting Permit Holders and Enforcing Compliance. | 33 |
| 3.18. Available Forms. | 34 |
| Attachment 1— GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION | 35 |
| Attachment 2— LICENSE EXEMPT QUANTITIES | 42 |
| Attachment 3— APPLYING FOR A USAF RADIOACTIVE MATERIAL PERMIT | 43 |
| Attachment 4— MINIMUM TRAINING AND EXPERIENCE REQUIRED FOR PERMIT RSO | 46 |
| Attachment 5— MANAGING LOW LEVEL RADIOACTIVE WASTE BURIAL SITES | 49 |
| Attachment 6— MANAGING AND DISPOSING OF RADIOACTIVE WASTE | 50 |
| Attachment 7— REPORTING CRITERIA | 53 |
| Attachment 8— RADIOACTIVE MATERIAL INCIDENT AND ACCIDENT (DEFECT AND NONCOMPLIANCE) CHECKLIST | 57 |
| Attachment 9— RULES FOR USING RADIOIODINE | 59 |
| Attachment 10— POSTING NOTICES TO WORKERS | 60 |
| Attachment 11— Summary of Records Retention Requirements | 62 |

Chapter 1

RESPONSIBILITIES

1.1. Deputy Assistant Secretary of the Air Force (Environment Safety and Occupational Health).

SAF/MIQ: Provides guidance, direction, and oversight of all matters pertaining to the formulation, review, and execution of policies, plans, programs and budgets relative to Environment, Safety and Occupational Health (ESOH). SAF/MIQ serves as the central focal point for SAF/MI and the Air Force on ESOH matters.

1.2. Surgeon General. HQ USAF/SG:

1.2.1. Sets Air Force policy for controlling ionizing radiation hazards and sets limits for exposure to ionizing radiation.

1.2.2. Maintains the US Air Force Radioisotope Committee (RIC), under the Commander, Air Force Medical Operations Agency (AFMOA), to coordinate all use of radioactive materials in the Air Force.

EXCEPTIONS:

1.2.2.1. Radioactive materials transferred from the Department of Energy (DoE) to the Department of Defense (DoD) as parts of nuclear weapon systems.

1.2.2.2. Certain radioactive parts of weapon systems under purview of AFSC/SEW.

1.2.2.3. Nuclear reactor systems, parts and fuel controlled under section 91b of the AEA.

1.2.2.4. DoE activities related to SAFE HAVEN requirements.

1.3. Undersecretary of the Air Force for Acquisition SAF/AQ:

1.3.1. Appoints a voting representative and alternate to the RIC.

1.3.2. Ensures adequate acquisition procedures exist to ensure radioactive material is procured in accordance with applicable Air Force Instructions or other Federal Regulations (see **1.14.**).

1.4. Deputy Chief of Staff for Plans and Operations. HQ USAF/XO:

1.4.1. Appoints a voting representative and alternate to the RIC.

1.4.2. Coordinates planned uses for radioactive materials with the RIC.

1.5. Deputy Chief of Staff for Installations and Logistics. HQ USAF/IL:

1.5.1. Appoints voting representatives and alternates to represent supply, civil engineering and transportation functions to the RIC.

1.5.2. Coordinates on civil engineering, supply and transportation policies dealing with radioactive materials covered by this instruction.

1.5.3. Provides guidance to AFMC on the management of items.

1.6. Commander, Air Force Medical Operations Agency, AFMOA/CC:

- 1.6.1. Establishes the USAF RIC Secretariat to work on behalf of the RIC in providing functional oversight of non-weapons related radioactive material use in the Air Force
- 1.6.2. Chairs or appoints a designee to chair the RIC. Authorizes the Secretariat of the RIC, AFMOA/SGOR, to act in the Chairperson's absence.
- 1.6.3. Appoints a voting representative and alternate from the Secretariat.
- 1.6.4. Appoints a voting representative and alternate to the RIC from the Environmental and Occupational Medicine Division (AFMOA/SGOE).
- 1.6.5. Appoints a consultant in nuclear medicine or medical physics and alternate as a voting representative to the RIC.
- 1.6.6. Appoints an individual in operational health physics and alternate as a voting representative to the RIC.

1.7. The Air Force Inspection Agency, Medical Inspection Division. AFIA/SG:

- 1.7.1. Appoints a voting representative to the RIC.
- 1.7.2. Conducts inspections to assess permittee compliance with representations and conditions of their permit authorizing them to possess and use radioactive materials.
- 1.7.3. Sends copies of all inspection schedules and reports concerning permit compliance according to AFI 90-201, *Inspector General Activities* to: AFMOA/SGOR, 110 Luke Avenue, Room 405, Bolling AFB DC 20332-7050
- 1.7.4. Sends a copy of all inspection reports dealing with NRC regulated materials to the US Nuclear Regulatory Commission Region IV, 611 Ryan Plaza Drive, Ste 400, Arlington TX 76011-4010.
- 1.7.5. Provides to the RIC quarterly and annual summaries of the status of permit compliance inspections, results of completed inspections, and trends in permit inspection findings.
- 1.7.6. Consults with AFMOA/SGOR on permit inspection policies, methods, and techniques.

1.8. Air Force Safety Center, Division of Weapons, Space, and Nuclear Safety. AFSC/SEW:

- 1.8.1. Sets requirements and oversees programs to assess the safety of certain radioactive parts of weapon systems, reactor applications, space power applications, and any radioactive sources that may be part of nonnuclear space or missile activities.
- 1.8.2. Serves as the Air Force single point of contact with the NRC and DoE on aspects of reactor licensing covered in Section 91b of the AEA.
- 1.8.3. Works with AFMOA/SGOR and AFMOA/SGOE to ensure the safety of radioactive materials used for reactors (see AFI 91-109, *Air Force Nuclear Reactor Program*), aerospace and space power (see AFI 91-110, *Nuclear Safety Review and Launch Approval for Space or Missile Use of Radioactive Material and Nuclear Systems*).
- 1.8.4. Provides regulatory oversight for the remediation of radioactive waste disposal sites and accident sites involving 91b Materials.

1.8.5. Appoints a technical representative to the RIC to advise on radioactive material control issues relative to AFSC's area of responsibility thereby ensuring consistent control of radioactive material within the Air Force.

1.9. Director of Civil Law, Air Force Legal Services Agency. AFLSA/JAC:

1.9.1. Appoints a voting representative and alternate to the RIC.

1.9.2. Coordinates legal issues about radioactive materials and acts as counsel to the RIC.

1.10. Director, AF Institute for Environment, Safety, and Occupational Health Risk Assessment (AFIERA):

1.10.1. Appoints a voting representative and alternate to the RIC.

1.10.2. Supports MAJCOMs and installations by maintaining and providing radiation dosimetry services through the Air Force Dosimetry Center, comprehensive radioanalytical capabilities, and health physics consultative services.

1.10.3. Provides to the RIC quarterly and annual summaries of occupational radiation exposure from radioactive material (RAM).

1.10.4. Operates the Air Force Radioactive and Mixed Waste Office. This office shall:

1.10.4.1. Provide technical oversight and coordination of all radioactive waste activities to include decommissioning of radiological waste burial sites or contaminated facilities and all aspects of radioactive and mixed waste disposal.

1.10.4.2. Negotiate and manage any necessary contracts with radioactive waste disposal contractors.

1.10.4.3. Coordinate radioactive waste disposal among Air Force activities, the DoD Executive Agent, disposal contractors, and disposal site operators, in accordance with **Attachment 6**.

1.10.4.4. Keep records of all radioactive waste transferred for disposal in accordance with AFMAN 37-139, *Disposition of Air Force Records - Records Disposition Schedule (formerly AFR 42-20V2)*.

1.10.4.5. Instruct waste generators on how to package and transport radioactive waste for disposal according to 10 CFR Part 71, 49 CFR, 40 CFR (mixed waste) and disposal site rules.

1.10.4.6. Provides to the RIC quarterly summaries of radioactive waste disposal, decontamination and decommissioning activities.

1.10.5. Provide technical health physics support to the RIC as may be necessary to ensure regulatory compliance and safety.

1.10.6. Provide Pacific Air Forces with health physics consulting services and laboratory support through Detachment 3, AFIERA.

1.10.7. Maintain the Air Force Radiation Assessment Team, which responds to radioactive material incidents or accidents according to AFI 32-4001, *Disaster Preparedness Planning and Operations*.

1.11. US Air Force Radioisotope Committee (USAF RIC):

1.11.1. Oversees Air Force uses of radioactive materials. **EXCEPTIONS:** Nuclear weapons systems, certain radioactive parts of nuclear weapon systems, and nuclear reactor systems, parts, and fuel controlled under section 91b of the AEA.

1.11.2. Is the single point of contact for the Air Force Master Materials License issued by the NRC. Sets up administrative controls to receive, possess, use, distribute, store, transport, transfer, and dispose of or otherwise manage radioactive materials per 10 CFR, 49 CFR, and the Air Force Master Materials License requirements.

1.11.3. Recommends policies to HQ USAF/SG through AFMOA/CC for keeping exposure from approved uses of radioactive materials "as low as reasonably achievable" (ALARA) but always below regulatory limits set out in 10 CFR Part 20, *Standards for Protection Against Radiation*.

1.11.4. Serves as the Air Force single point of contact with the NRC (including the NRC Sealed Source and Device Registry [SSDR]), or Agreement States on Byproduct, Source or Special Nuclear Material licensing.

1.11.5. Serves as the Air Force contact with the Council of Radiation Control Program Directors (CRCPD) and CRCPD licensing states for Naturally Occurring and Accelerator Produced Radioactive Materials.

1.11.6. Suspends or revokes authority for organizations and individuals to have, use, or supervise use of radioactive materials on Air Force installations when such action protects persons or property or maintains compliance with licensing requirements.

1.11.7. Identifies new or special inspection needs and reports them to AFIA/SG.

1.11.8. Reviews AFMOA/SGOR actions and permit requests of unusual scope referred by AFMOA/SGOR.

1.11.9. Reviews and advises on special situations involving radioactive materials as requested by the Air Force Secretariat, Air Staff, or Major Command.

1.11.10. Identifies and invites technical experts, as necessary, to assist the RIC or Secretariat in ensuring regulatory compliance.

1.11.11. Meets whenever necessary, but at least once each calendar quarter. A simple majority composes a quorum for a meeting.

1.11.12. Publishes and distributes minutes to all stakeholders (e.g., RIC members, MAJCOM Bioenvironmental Engineers, other MAJCOM representatives, other Service points-of-contact, etc.).

1.12. USAF Radioisotope Committee Secretariat. AFMOA/SGOR, acting for the RIC:

1.12.1. Handles all RIC correspondence and keeps copies of:

1.12.1.1. The Air Force Master Materials License.

1.12.1.2. Documents on RIC actions.

1.12.1.3. Air Force permits or other approvals for using radioactive materials.

1.12.2. Serves as the single point of contact between the RIC and the NRC or Agreement States, and assists, where requested, in any dealings with host countries for OCONUS permitted activities.

- 1.12.3. Reviews and approves Air Force permit applications and other requests to use radioactive materials under the RIC's authority.
- 1.12.4. Decides whether individuals are qualified by training, education, and experience to use or supervise the use of radioactive materials.
- 1.12.5. Sets special conditions for acquiring, receiving, storing, distributing, using, transferring, and disposing of radioactive materials under the RIC's authority.
- 1.12.6. Coordinates with AFSC/SEW on issues involving the licensing of certain radioactive materials (for reactors see AFI 91-309, aerospace and space power see AFI 91-310).
- 1.12.7. Interprets the material in this AFI, all NRC license and AF permit conditions, and ionizing radiation safety policy.
- 1.12.8. Makes pre-permitting visits and responds to radioactive materials incidents and accidents to ensure that permittees comply with all rules and regulations.
- 1.12.9. Carries out RIC decisions.
- 1.12.10. Recommends to the RIC Chairperson suspension of authority for organizations and individuals to use or supervise the use of radioactive materials in order to protect persons or property or to maintain License compliance.
- 1.12.11. Has the authority to exempt a permittee from any requirement of this regulation provided that the exemption is consistent with requirements of 10 CFR.
- 1.12.12. Has the authority to be more restrictive than 10 CFR.

1.13. Commander, Air Force Materiel Command, AFMC/CC.

- 1.13.1. Appoints two technical representatives, one from HQ AFMC/SG and one from the AF radioactive waste program office.
- 1.13.2. Establishes an Air Force radioactive waste program office to oversee all radioactive and mixed waste disposal activities.
- 1.13.3. Establishes an office to oversee and coordinate recycling of Air Force radioactive materials where appropriate and cost-effective.
- 1.13.4. Establishes an Air Force Radiation Assessment Team to respond to radiological threats.
- 1.13.5. Ensures that all radioactive items (including waste products, i.e., scrap materials) are identified in a manner required by Title 10 or Title 29, CFR. Data for each different item will be coordinated with and developed by the appropriate Air Force activity radiation safety focal point.

1.14. System Program Managers, Material Group Managers, Product Group Managers, Contracting Officers and others responsible for acquisitions must:

- 1.14.1. Limit the use of radioactive materials consistent with Air Force needs and document the reasons for deciding that nonradioactive materials or less hazardous radioactive materials are not practical. Be sure to consider eventual disposal costs and entire life cycle costs (including handling, permitting, and eventual disposal) in any decision to procure items containing radioactive material.

- 1.14.2. Prohibit acquiring and placing radium or devices containing radium into Air Force inventory or operations.
- 1.14.3. Follow the latest version of MIL-STD-882, *Systems Safety Program Requirements*, and make sure that personnel build in radiation safety from the beginning design stages for systems that use radioactive materials.
- 1.14.4. Include radiation safety requirements in all contracts awarded for operating, changing, and repairing systems that contain radioactive materials.
- 1.14.5. Use American National Standard Institute (ANSI) and American Society of Testing Materials (ASTM) standards in specifying plated or encapsulated sources that contain radioactive materials.
- 1.14.6. Never accept radioactive material into the Air Force inventory unless an Air Force permit exists to allow possession of the material or this instruction or the RIC exempts the need for a permit. Before approving shipment or transfer of radioactive materials, ensure the receiving organization possesses a permit or NRC license authorizing the organization to possess the material. Note that this requirement applies whether or not the radioactive material in question is regulated by the NRC.
- 1.14.7. Ensure radioactive material is appropriately identified to users by its radionuclide, form, and activity. Include the NRC's Sealed Source and Device Registry (SSDR) numbers and a copy of the Department of Transportation (DoT) Special Form certification (if one exists). NOTE: The SSDR must specify that both the plated or encapsulated source of radioactive material as well as the device containing the source are approved for their intended use unless AFMOA/SGOR specifies that the sources are exempt. The SSDR must specifically list any source intended for use in a device as approved for use in that device.
- 1.14.8. Ensure that AF users of devices/items having radioactive material receive clearly written instructions on how to properly use, store, package, and label radioactive materials for transportation and how to dispose of them.
- 1.14.9. Ensure that contractors comply with **chapter 3.3.3 and 3.4.10** of this instruction.

1.15. USAFE Preventive Medicine Flight (86 MDSS/SGS (TPMF)): Provides health physics consulting to the US Air Forces in Europe.

1.16. Installation Commanders.

- 1.16.1. Designates the Installation Bioenvironmental Engineer, or other individual with equivalent radiation experience, as the Installation Radiation Safety Officer (RSO).
- 1.16.2. Ensures the Installation RSO is notified of all planned uses of radioactive material on the installation.
- 1.16.3. Enforces the rule that non-Air Force organizations, including other DoD organizations, DoE organizations, DoE prime contractors, and other contractors desiring to use radioactive materials either licensed by the NRC or an Agreement State on the installations, have one of the following:
 - 1.16.3.1. A proper NRC or Agreement State license. The NRC Reciprocity Form (NRC Form 241) must accompany the Agreement State license.
 - 1.16.3.2. A proper US Navy Radioactive Material Permit.

1.16.3.3. Written certification from DoE organizations or DoE prime contractors that they are exempt from NRC license requirements.

1.16.3.4. Written approval from AFMOA/SGOR to use radioactive materials on the installation.

1.16.4. Ensures that RAM shipments within their installation are in compliance with DOT regulations. (**EXCEPTION:** shipping documents are not required on the base proper.)

1.17. Commanders.

1.17.1. Contact the Installation Radiation Safety Officer prior to receiving, possessing, using, distributing, storing, transporting, transferring or disposing of any commodity containing radioactive material.

1.17.2. In concert with the Installation Radiation Safety Officer, apply for a USAF Radioactive Material Permit from AFMOA/SGOR in accordance with Section 3.4 unless the material outside the scope of this regulation (as stated in para 1.8.) or expressly excluded from the permit requirement by this AFI.

1.17.3. Enforce compliance with all permit or applicable NRC General License conditions.

1.17.4. Limit their command's direct contact with the NRC to contact initiated by the NRC or contact permitted under 10 CFR Part 19, *Notices, Instructions and Reports to Workers: Inspection and Investigations*, and NRC Form 3, **Notice to Employees** (see **Attachment 10**).

1.17.5. Ensure procedures exist to prevent the unauthorized release or improper disposal of radioactive material under their control.

1.17.6. Make sure that personnel conduct human research or clinical investigation according to AFI 40-402, *Using Human Test Subjects in Research Development Test and Evaluation*, and AFI 40-403, *Clinical Investigation and Human Test Subjects in the Medical Service*.

1.17.7. Make sure that a subordinate who is given responsibility for enforcing the provisions in a permit has clear authority to do so.

1.17.8. Set up a program to ensure that all persons (security, housekeeping, maintenance, nursing) whose duties may bring them into contact with use or storage areas for radioactive materials get training according to 10 CFR Part 19.12, *Instructions to workers*, and, as applicable, 10 CFR Part 35, *Medical Use of Byproduct Material*.

1.17.9. Follow posting and notification rules in this instruction and 10 CFR Part 19, 10 CFR Part 20 and 29 CFR Part 1910.

1.17.10. Use Attachment 4 to help identify persons to nominate as Permit Radiation Safety Officers (RSO). **NOTE:** AFMOA/SGOR has the final decision on whether or not an individual qualifies as a permit RSO.

1.17.11. When required by the permit, establish a Radiation Safety Committee (RSC).

1.17.11.1. Members of broad scope medical permit RSCs must qualify under 10 CFR Part 35.22, *Radiation Safety Committee*.

1.17.11.2. Members of nonmedical broad scope permit RSCs must include the unit commander or the commander's appointed representative, the installation RSO, the permit RSO, and a named user for each type of use specified in the permit.

1.17.11.3. The most senior member, preferably a senior field grade officer, chairs the RSC on behalf of the commander. **NOTE:** The Permit RSO may not chair the RSC.

1.17.12. For medical permits, ensure that a military or civilian medical physics consultant approved by the RIC does an on-site review every 2 years of the radiation safety program.

1.18. Chairperson of the Permit Radiation Safety Committee (RSC). Some permit types require the formation of an RSC. The Chairperson of RSC acts for the commander responsible for the permit and is required to:

1.18.1. Ensure the RSC meets as often as needed, but not less than quarterly. A quorum consisting of the commander's designated representative, the permit or alternate RSO, the installation RSO, and at least half of the RSC's membership must be present for a meeting.

1.18.2. Prepare meeting minutes that include:

1.18.2.1. The date of the meeting.

1.18.2.2. Members present and absent.

1.18.2.3. A summary of deliberations and discussions, including the numerical results of all ballots.

1.18.2.4. Recommended actions, including identifying the office of primary responsibility (OPR) and whether the action is open or closed.

1.18.2.5. Approvals granted for individuals, protocols, or other actions, and a copy of the credentials or other documents used as the basis for the approvals.

1.18.2.6. ALARA program reviews.

1.18.3. Ensure AFMOA/SGOR, the commander responsible for the permit and each RSC member get a signed copy of meeting minutes no later than 45 days after a meeting.

1.18.4. RSC meeting minutes must be retained until termination of the permit.

1.19. Permit Radiation Safety Committee (RSC):

1.19.1. Must familiarize themselves with Air Force and NRC regulations that apply to a permit, the representations and conditions of the permit, and the local regulations for using radioactive materials.

1.19.2. Review the training and experience of individuals nominated to be users, and radiation safety officers, and recommend approval or disapproval.

1.19.2.1. Ultimate authority to approve/disapprove an individual user on a permit rests with AFMOA/SGOR.

1.19.2.2. When local approval of physicians as medical users is authorized, as under a broad scope permit, the RSC may approve such users provided they have:

1.19.2.2.1. A current medical license.

1.19.2.2.2. Board certification, or training and experience, described in 10 CFR Part 35, Subpart J, *Training and Experience Requirements* and 10 CFR Part 35.972, *Recentness of Training*.

1.19.2.2.3. Intent to be an active participant in the facility's medical use program.

1.19.2.3. The RSC periodically reviews authorized users to verify that all are still active in the programs for which they have been approved.

1.19.3. Review and approve or deny requests to use radioactive materials within the scope of uses authorized by the permit. Approved uses must conform to NRC and Air Force rules, must not exceed facility or staff limitations, and must conform to ALARA philosophy.

1.19.4. With the advice and consent of the permit RSO and the commander's representative, review and approve or deny minor changes in radiation safety rules that are not potentially important to safety and are according to 10 CFR Part 35.31, *Radiation safety program changes*.

1.19.5. Establish special conditions for proposed uses of radioactive materials like bioassays, physical examinations of users, and special survey methods.

1.19.6. Set up investigation levels for individual occupational radiation exposures and recommend ways to keep individual and collective doses ALARA.

1.19.7. Quarterly, review the RSO's summary report of the occupational radiation exposure records of all workers. Investigate individuals or groups of workers with higher than expected exposure.

1.19.8. Quarterly, review all incidents involving radioactive materials to ensure that the cause was correctly identified and adequate action was taken.

1.19.9. Annually, review the RSO's summary report of the entire radiation safety program to determine whether activities are safe, comply with Air Force and NRC regulations and conditions of the permit, and are ALARA.

1.19.9.1. Examine representative records, RSO reports, results of Air Force and NRC inspections, written safety rules, user waste disposal practices, and the adequacy of the management control system. Involve the installation environmental coordinator and installation radiation safety officer in the review of waste disposal practices.

1.19.9.2. Recommend remedial action to correct deficiencies identified in the radiation safety program to the commander and functional managers. Rate deficiencies and assign a "Risk Assessment Code" according to AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*.

1.19.10. Medical permittees shall comply with the provisions of 10 CFR Part 35.32.

1.19.11. Review and approve or deny research protocols using radioactive materials based on safe and approved uses of radioactive material in accordance with AFI 40-402.

1.20. Installation Staff Judge Advocates (SJA): If asked by installation RSO, Installation Staff Judge Advocates get translated copies of host nation laws about controlling radioactive materials used on the installation. SJA also serves as the legal advisor for claims or potential regulatory violations brought against the installation by federal regulatory agencies or civilian interests.

1.21. Installation Radiation Safety Officer (RSO):

1.21.1. Normally this individual will be the most senior Bioenvironmental Engineer or Health Physicist on the installation.

1.21.2. Sets up the overall installation radiation protection program and keeps the installation, tenant and subordinate commanders informed about radiation health and safety issues and effectiveness of measures to control radiation hazards. **NOTE:** The installation RSO may also serve as a permit RSO.

1.21.3. With installation contracting officers, writes installation instructions on how to coordinate and get approval for non-Air Force organizations to use radioactive materials on the installation.

1.21.4. Keeps the installation commander, fire and civil engineer readiness flight chiefs informed of such use.

1.21.5. Briefs the installation Environment Safety and Occupational Health (ESOH) Committee or Occupational Safety and Health (AFOSH) Council, or equivalent, on new permits or major permit amendments so that key installation agencies know about any new uses of radioactive materials.

1.21.6. Works with the permit RSO, environmental coordinator, Bioenvironmental Engineer, and fire chief to research storage and disposal needs, and develop methods, locations, and rules for handling and storing radioactive materials.

1.21.7. Conducts annual surveys where radioactive materials are received, used or stored. Documents the following in accordance with 10 CFR Part 20 (see **Attachment 11** for Record maintenance Requirements):

1.21.7.1. Compliance with mandated radiation safety requirements such as protective shielding and equipment, use of lead aprons, posting of warning signs, training of workers on the radiological hazards, and proper wear of personnel dosimetry.

1.21.7.2. Exposure potential either through direct measurements or review of personnel dosimetry results.

1.21.7.3. Permittee radiation safety programs to ensure that leak tests, inventories, and training are being accomplished properly and at the appropriate frequency.

1.21.7.4. That any radiation survey meter, except those designed for neutron measurements, which is used to determine compliance with 10 CFR has a dedicated (always available at time of calibration and use) check source. Persons performing each meter calibration to establish a baseline response representing proper operation of the meter must use the check source. The baseline reading must be annotated on the meter. The check source must be read at the beginning of each day of use of the meter and at any time that damage to the meter is suspected.

1.21.7.5. Appropriate warning signs are installed throughout the installation in accordance with applicable NRC, state and OSHA regulations.

1.21.8. Establishes a program for tracking personnel dosimetry results, and establishes investigation levels to ensure exposure to personnel is maintained As Low As Reasonably Achievable. Investigational levels should be tailored to each occupational group and are intended to identify adverse trends, assess their causes and implement appropriate corrective action.

1.21.9. Establishes procedures to ensure that RAM shipments within AF installations are in compliance with 49 CFR. (Except shipping documents are not required.)

1.21.10. Has the authority to order cease and desist of permit activity if unsafe practices are being used, gross negligence is observed, or failure to follow CFRs is identified.

1.22. Permittee.

1.22.1. Permittee is the commander or senior functional manager of the Air Force organization identified in block 1 of the permit.

1.22.2. Permittees:

1.22.2.1. Ensure that all federal regulations, Air Force instructions, permit conditions and representations in permit applications are complied with.

1.22.2.2. Submit an individual to be named as Permit Radiation Safety Officer to be approved by AFMOA/SGOR.

1.22.2.3. Ensure that an ALARA training program is in place.

1.22.2.4. Ensure that an annual internal audit is completed.

1.22.3. Keeps a copy of all records and reports required by the NRC and Air Force regulations that apply to each permit, including:

1.22.3.1. The permit and permit application.

1.22.3.2. Amendments.

1.22.3.3. All correspondence related to the permit.

1.23. Permit Radiation Safety Officer (RSO).

1.23.1. Checks the receipt, storage, distribution, use, transfer, and disposal of radioactive materials for compliance with:

1.23.1.1. Approved rules.

1.23.1.2. The specific conditions of the permit.

1.23.1.3. Directives listed in this instruction.

1.23.2. Informs the responsible commander and supervisors when procedures are not in compliance and recommends corrective action.

1.23.3. Helps the permittee determine, report, promptly investigate, and correct:

1.23.3.1. The causes, severity, and results of accidents or incidents.

1.23.3.2. Noncompliance or other deviation from approved radiation safety rules. Sets up, in one binder or file, the permittee's written policy and rules for:

1.23.3.3. Authorizing the purchase of radioactive material.

1.23.3.4. Receiving and opening packages of radioactive materials.

1.23.3.5. Storing radioactive materials.

1.23.3.6. Keeping an inventory record of radioactive materials.

1.23.3.7. Emergency response to a loss of control of radioactive material.

1.23.3.8. Using radioactive material safely.

1.23.3.9. Doing periodic radiation surveys.

1.23.3.10. Calibrations and checks of survey instruments and other safety equipment.

1.23.3.11. Disposing of radioactive material.

1.23.3.12. Training personnel who work in, or frequent, radioactive material use and storage areas.

1.23.4. Keeps a copy of all records and reports required by the NRC and Air Force regulations that apply to each permit, including:

1.23.4.1. The permit and permit application.

1.23.4.2. Amendments.

1.23.4.3. All correspondence related to the permit.

1.23.5. Annually briefs the responsible commander on the permit radiation safety program.

1.23.6. Responsible for completion of annual ALARA training commensurate with the permit level of radiation risk. Implementation will be in accordance with NRC NUREG 1556 series for the applicable permit type.

1.23.7. Responsible for completion of annual internal audit in accordance with NUREG 1556 series for the applicable permit type.

1.23.8. Helps the RSC (if applicable) understand and carry out its duties.

1.23.9. Works with the installation RSO on actions that may affect the installation, such as changes in source-use locations and method of disposal, etc.

1.23.10. Ensures that any radiation survey meter used to determine compliance with 10 CFR has a dedicated (see 1.21.8.) check source or set of sources available. Persons performing each meter calibration to establish a baseline response representing proper operation of the meter must use the check source. The baseline reading must be annotated on the meter. The check source must be read at the beginning of each day of use of the meter and at any time that damage to the meter is suspected.

1.23.11. Ensure persons involved with the transportation (i.e., receipt, shipment, packaging) of radioactive material meet training requirements specified in 49 CFR 172.704.

1.23.12. Has the authority to order cease and desist of permit activity if unsafe practices are being used, gross negligence is observed, or failure to follow CFRs is identified.

1.24. Workers. Personnel using radioactive materials must obey the permit authorizing the materials, the directives listed in this instruction, local operating instructions, and the ALARA principle.

Chapter 2

REGULATORY AUTHORITY FOR RADIOACTIVE MATERIALS

2.1. Source of Authority . The Atomic Energy Act (AEA) of 1954 and the Energy Reorganization Act of 1974 (Public Law 93-438) give the NRC the authority to regulate Byproduct, Source, and Special Nuclear Material. **EXCEPTION:** Special Nuclear Material described in section 91b of the AEA is exempted from NRC regulation. By exclusion, NRC does not regulate naturally occurring or accelerator produced radioactive materials (NORM or NARM). The Air Force regulates NORM and NARM consistent with NRC regulations. Authority for use and storage of 91b Material is covered under AFI 91-109.

2.1.1. The NRC regulatory authority extends to the United States, its possessions and territories, and Puerto Rico. For regulations issued and enforced by the NRC, see Title 10, *Code of Federal Regulations*, Chapter 1, Parts 1 through 199.

2.1.2. Federal agencies are subject to NRC regulatory authority.

2.1.3. Within an Agreement State, the state has regulatory authority over non-federal activities conducted on installation property; which is not under exclusive federal jurisdiction.

2.2. Resource Conservation and Recovery Act (RCRA). The RCRA gives the Environmental Protection Agency (EPA) jurisdiction to regulate the management and disposal of hazardous wastes that contain radioactive materials (mixed waste). EPA only has jurisdiction to regulate the ‘hazardous’ properties of such wastes because the definition of ‘hazardous waste’ excludes byproduct, source, and special nuclear material. The NRC has jurisdiction to regulate the radioactive properties of such wastes.

2.2.1. Solid low level radioactive wastes (LLRW) include limited quantities of Byproduct, Source and Special Nuclear Material. They also may contain Naturally Occurring and Accelerator Produced Radioactive Material and they may fall within the definition of hazardous wastes as set out in Title 40 Code of Federal Regulations, Chapter 1, *Environmental Protection Agency*, Part 261, *Identification and Listing of Hazardous Waste* (40 CFR 261).

2.2.2. Wastes that contain both AEA-regulated radioactive materials and hazardous wastes (as defined by 40 CFR) are termed Mixed Waste.

2.2.2.1. The NRC regulates the Byproduct, Source, and Special Nuclear Material constituents.

2.2.2.2. EPA regulates the hazardous chemical and Naturally Occurring and Accelerator Produced Radioactive Material constituents.

2.2.2.3. Neither agency has exclusive jurisdiction over Mixed Waste under current Federal law.

2.2.2.4. Generators of Mixed Waste must meet both NRC and EPA rules unless exempted by those rules. Refer to 40 CFR 261, AFD 32-70, *Environmental Quality*; AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*; AFI 32-7020, *The Environmental Restoration Program*, AFI 32-7042, *Solid and Hazardous Waste Compliance*; AFD 48-1, *Aerospace Medicine*, and AFI 48-501, *Environmental Quality*, for guidance on compliance with EPA hazardous materials regulations.

2.3. Clean Air Act. This act gives the EPA authority over non-NRC regulated radionuclide emissions from Federal facilities. For applicable regulations, see 40 CFR 61, Subpart I, *National Emission Stan-*

dards for Radionuclide Emissions From Facilities Licensed by the Nuclear Regulatory Commission and Federal Facilities Not Covered by Subpart H. NRC regulates air emissions from NRC licensed federal facilities in accordance with 10 CFR Part 20.1101d. Generators must comply with both NRC and EPA rules. For guidance on complying with EPA air emission standards, refer to AFD 32-70, *Environmental Quality*, and AFI 32-7040, *Air Quality*.

2.4. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):

Section 103 of CERCLA requires notification of the National Response Center immediately at 1-800-424-8802 in event a release of greater than the 'reportable quantity' of a hazardous substance is released to the environment. A list of applicable reportable quantities for radionuclides can be found in 40 CFR Part 302.4, Appendix B-Radionuclides.

2.5. Emergency Planning and Community-Right-To-Know-Act (EPCRA): EPCRA requires that whenever a 'reportable quantity' of a CERCLA hazardous substance leaves installation boundaries, the State Emergency Response Commission (SERC) and Local Emergency Planning Commission (LEPC) must be notified (see 40 CFR 355).

2.6. Other Programs. The Air Force has regulatory authority, or receives it from the NRC through the USAF Master Materials License, for:

2.6.1. Receipt, storage, internal distribution, use, transfer, and disposal by Air Force organizations of Byproduct, Source, and limited quantities of Special Nuclear Material.

2.6.2. Production, receipt, storage, distribution, use, transfer, and disposal by Air Force organizations of Naturally Occurring and Accelerator Produced Radioactive Material.

2.6.3. Receipt, storage, distribution, use, transfer, and disposal by Air Force organizations of radioactive materials classed as 91b Material.

2.6.4. Receipt, storage, distribution, use, transfer, and disposal of Naturally Occurring and Accelerator Produced Radioactive Material and radioactive materials classed as 91b Material by non Air Force organizations on Air Force installations where exclusive federal jurisdiction exists.

Chapter 3

PROGRAM ELEMENTS

3.1. Prohibitions and Special Requirements for Accepting or Using Radioactive Materials.

3.1.1. Do not apply radioactive material to people or clothing. **EXCEPTION:** Radioactive material may be applied as part of an approved medical diagnostic or therapeutic procedure.

3.1.2. Do not put radioactive materials in any food, beverage, cosmetic, drug, or other commodity, product or item unless a specific NRC license or USAF Radioactive Material Permit authorizing the action has been issued.

3.1.3. Do not put radioactive material in souvenirs or take items with radioactive materials as souvenirs (e.g., 30 millimeter (mm) API depleted uranium penetrators, dials and gauges containing radium paint, exit signs containing tritium, etc.).

3.1.4. Do not use radioactive materials in displays open to the public. **EXCEPTION:** You may use such materials for displays that teach personnel how to operate a device that functions only if radioactive material is present, train personnel how to recognize an item or substance, or those authorized by the Air Force Museum (e.g., static display aircraft or other weapon system components having dials, gauges containing radioactive material) in accordance with AFI 84-103, Museum System. Displays will be labeled and access controlled to ensure exposures to worker and public are below the limits outlined in 10 CFR Part 20 and ALARA. A USAF Radioactive Material Permit may be required by paragraph 3.3.

3.1.5. Do not cite the Air Force Master Materials License as authority to receive radioactive materials, or devices that have radioactive materials, into the Air Force inventory without first getting written approval from the RIC. **EXCEPTION:** Only AFMOA/SGOR, acting for the RIC, may cite the Air Force Master Materials License directly as authority to receive radioactive materials in the Air Force.

3.1.6. Do not cite a USAF Radioactive Material Permit as authority to receive radioactive materials or devices that have radioactive materials, unless approved by the permittee.

3.1.7. Do not accept physical custody of any radioactive material without first getting written approval from the RIC.

3.1.8. Do not respond to civilian or other non-Air Force requests for assistance involving potential Air Force-owned radioactive materials until first coordinating with AFIERA/SDRH and AFMOA/SGOR.

3.1.9. Air Force activities outside the United States follow relevant laws and regulations of the host country concerning import, export, control, and disposal of radioactive materials according to the Status of Forces Agreement (or similar document) with the host country. Radiation safety standards and rules followed by Air Force organizations will be at least as strict as those followed within the United States.

3.1.9.1. Permits issued to organizations on installations outside the United States are subject to any relevant host nation restrictions under Status of Forces Agreements.

3.1.9.2. Air Force installations located within the host nation will honor contractor host nation licenses for using radioactive materials in like manner as a NRC or Agreement State License.

3.2. Procuring Radioactive Materials .

3.2.1. Individuals or organizations:

3.2.1.1. Shall not buy radioactive materials or accept radioactive materials into the Air Force inventory without a permit. **EXCEPTION:** See paragraph 3.3.2.

3.2.1.2. Shall not buy or use radium without written approval from the RIC. **EXCEPTION:** See paragraph 3.3.2.

3.2.1.3. Shall not buy radio-luminescent signs (e.g., emergency exit signs containing tritium) and markers without RIC written approval.

3.2.1.4. For radio-luminescent signs put in use before issuance of this AFI; the base civil engineering office in cooperation with the local bioenvironmental office, must provide the RIC with an inventory of the signs, ensure that the radioactive marking are in place, and provide a plan for the replacement of the signs.

3.2.2. For guidelines on procuring items with radioactive materials, follow AFJI 23-504, *Radioactive Items in the DoD Supply Systems*, and this instruction.

3.3. Requirements for a Permit or License:

3.3.1. Air Force organizations must get permits before receiving, storing, distributing, using, transferring, or disposing of:

3.3.1.1. Specifically or Generally Licensed Byproduct, Source, and Special Nuclear Material.

3.3.1.2. Naturally Occurring and Accelerator Produced Radioactive Materials. **NOTE:** Electron tubes containing rhenium-187 do not require a permit.

3.3.2. Air Force organizations do not require a permit for:

3.3.2.1. Exempt quantities or concentrations of radioactive material as allowed by 10 CFR Part 30.14, *Exempt Concentrations*, 10 CFR Part 30.18, *Exempt Quantities*, and Attachment 2. **NOTE:** The material must have been originally distributed from the manufacturer as exempt. Licensed or permitted radioactive material cannot be considered as exempt simply because it has decayed or has been subdivided to a quantity below the exempt quantity or has been diluted to a concentration below the exempt concentration.

3.3.2.2. Items specifically excepted from NRC license or permit under 10 CFR Part 30.15, *Certain Items Containing Byproduct Material*; 10 CFR Part 30.19, *Self-luminous Products Containing Tritium, Krypton-85, or Promethium-147*; and 10 CFR Part 30.20, *Gas and Aerosol Detectors Containing Byproduct Material*. **NOTE:** The item must have been originally distributed from the manufacturer as exempt and meet strict activity and use limitations specified in the appropriate section of 10 CFR.

3.3.2.3. Source Material specifically exempted by 10 CFR Part 40.13, *Unimportant Quantities of Source Material*, subject to restrictions outlined in 10 CFR Part 40.13 for each exemption. **NOTE:** The item must have been originally distributed from the manufacturer as exempt from

licensing and meet strict activity and use limitations specified in 10 CFR Part 40.13. This exemption does not apply to any use in which the material is physically altered or to be disposed.

3.3.2.4. Thorium-232 check sources in compliance with 10 CFR Part 40.22. **NOTE:** The general license specified in 10 CFR Part 40.22, *Small quantities of source material*, in most cases, however, does not apply to Air Force use of source material.

3.3.2.5. General License items when managed according to 10 CFR Part 31.5, *Certain Measuring, Gauging or Controlling Devices* or 10 CFR Part 31.7, *Luminous Safety Devices for use in Aircraft*.

3.3.2.6. The following type of stock-listed items:

3.3.2.6.1. Watches containing tritium-gas for luminescent purposes. Depending on the situation, the RIC may require a permit for control purposes or to ensure compliance with regulations.

3.3.2.6.2. Counterweights constructed of depleted uranium and meeting the conditions specified in 10 CFR Part 40.13, provided the items are used for their intended purpose and are not physically processed or altered. Individual storage locations for projectiles (i.e., 30 mm Armor Penetrating Incendiary (API) Munitions) constructed of depleted uranium.

3.3.2.6.3. Aircraft or other structural components constructed of Magnesium-Thorium alloy meeting the criteria of 10 CFR Part 40.13, provided the items are used for their intended purpose and are not physically processed or altered.

3.3.2.7. Nuclear weapons and certain radioactive parts of weapons systems classed as 91b Material.

3.3.2.8. Reactor fuel elements and sources inherent to reactor operations, that is, neutron start-up sources classed as 91b Material. For approval of storage and use of 91b Material, see AFI 91-109. **NOTE:** This exemption does not apply to ancillary support sources such as calibration sources that are not classed as 91b Materials.

3.3.2.9. Electron tubes containing rhenium-187 do not require a permit.

3.3.2.10. Oxygen regulators containing radium-226 do not require a permit.

3.3.2.11. Static eliminators containing Po-210 do not require a permit.

3.3.2.12. Whenever the RIC waives the requirement for a permit.

3.3.3. Non-Air Force organizations, except DoE organizations and DoE prime contractors, bringing radioactive materials to Air Force installations or using them there must have a NRC or Agreement State license authorizing work on the installation and written approval from the installation commander's appointed approval authority, normally the installation RSO.

3.3.4. DoE organizations and DoE prime contractors must certify in writing that they are exempt from NRC licensing requirements.

3.4. Getting Permits, Amendments, and Other Authorizations for Radioactive Materials Use.

3.4.1. Types of Licenses: There are basically two types of Air Force permits: Template and Non-Template.

3.4.1.1. Template permits are issued for devices or applications which pose relatively little radiological risk and employ standardized permit conditions.

3.4.1.2. Non-Template permits are issued in those instances where a template permit is not appropriate (i.e., relatively high radiological risk or unique application where standard permit conditions are not appropriate).

3.4.2. Application for New Permits: Initial applications for both types of permits are prepared and submitted in accordance with Attachment 3. *Exception: AFMOA/SGOR should be contacted if an immediate mission critical permit or amendment is required and which due to time constraints cannot be handled in accordance with procedures given in Attachment 3.*

3.4.2.1. For NRC forms, regulatory guides, and guidance on the administrative aspects of permits, contact AFMOA/SGOR, 110 Luke Ave, Room 405, Bolling AFB DC 20332-7050, <http://sg-www.satx.disa.mil/moasgor/>.

3.4.2.2. Activities planning new or unique applications of radioactive materials must contact AFMOA/SGOR as early as possible to decide the permit scope and need for a visit by the permit reviewer.

3.4.2.3. Plans for new facilities in which unsealed radioactive material is to be used must be approved by AFMOA/SGOR before construction begins.

3.4.2.4. Applications for activities viewed to have a significant environmental impact, pursuant to subpart A of 10CFR51, shall be filed 12 months prior to commencement of construction of the plant or facility in which the activity will be conducted. The application shall be accompanied by an environmental report, required pursuant to subpart A of 10CFR51.

3.4.2.5. Pursuant to 10CFR30.35, certain applications require a proposed decommissioning funding plan or a certification of financial assurance for decommissioning. AFMOA/SGOR should be contacted prior to non-template permit application submission on the need for this plan.

3.4.2.6. Each application to possess radioactive materials in unsealed form, on foils or plated sources, or sealed in glass in excess of the quantities in 10CFR30.72 “Schedule C – Quantities of Radioactive Material Requiring Consideration of the Need for an Emergency Plan” requires either a dose assessment or an emergency plan pursuant to 10CFR30.31(i)(1)(i) and (ii). AFMOA/SGOR should be contacted to coordinate development of these materials.

3.4.2.7. Applicants desiring to ship or transport fissile materials and other licensed or permitted radioactive material greater than a Type A quantity (see 10 CFR Part 71, Appendix A, *Determination of A1 and A2*) must have an NRC approved transportation quality assurance (QA) program according to 10 CFR Part 71, Subpart H, *Quality Assurance*. This can be accomplished by:

3.4.2.7.1. Submitting an application to AFMOA/SGOR IAW guidelines in 10 CFR Part 71, Subpart G, *Operating Controls and Procedures*; 10 CFR Part 71, Subpart H; and NRC Regulatory Guide 7.10, *Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material*. **NOTE:** Contact AFMOA/SGOR for guidance if not using a commercial NRC approved package.

3.4.2.7.2. Alternately, utilizing a source vendor or other NRC or Agreement State licensee with a NRC approved Transportation QA program. **NOTE:** Make sure that the contractor has a license for possessing the material at your facility. Contact AFMOA/SGOR for guidance.

3.4.3. Renewal Permit Applications: USAF RAM Permits are issued with set expiration dates. Renewal applications must be submitted two months prior to the set expiration date to allow time for the application to be reviewed and the new permit granted. Renewal applications for both types of permits are prepared and submitted in accordance with **Attachment 3**.

3.4.4. Permit Amendments: Permittees must apply for a permit amendment when the following conditions are anticipated:

3.4.4.1. Changing permit RSO

3.4.4.2. Allowing anyone other than individuals authorized by the permit to work with permitted materials. **EXCEPTION:** Working under the supervision of another authorized user as described in 10 CFR Part 35.25 or when approval is granted by AFMOA/SGOR.

3.4.4.3. Ordering radioactive materials differing in radionuclide, chemical or physical form or more than the maximum quantity authorized on the permit.

3.4.4.4. Changing the areas of radioactive material use or storage listed in the application or listed on the permit.

3.4.4.5. Making any changes in the shielding of rooms used for medical therapy, industrial radiography, instrument calibration, irradiation or other radioactive material use that needs radiation shielding in walls, floor or ceiling to protect adjacent areas.

3.4.4.6. Using radioactive materials for a clinical procedure allowed by 10 CFR Part 35 but not authorized by the existing permit.

3.4.4.7. If the change must be initiated prior to permit amendment approval, the permittee must maintain a record of each minor change until the permit amendment or renewal is granted. Documentation shall include:

3.4.4.7.1. The effective date of the change.

3.4.4.7.2. A copy of old and new radiation safety rules.

3.4.4.7.3. The reason for the change.

3.4.4.7.4. A summary of radiation safety matters considered before making the change.

3.4.4.7.5. The signature of the RSO.

3.4.4.7.6. The signatures of the authorized users affected by the change and the commander or the permit RSC chairperson.

3.4.4.8. Permit amendments are not required for the following:

3.4.4.8.1. Editing radiation safety rules or procedures for clarity or conformance with local publication formats or updating names, telephone numbers, and addresses.

3.4.4.8.2. Replacing equipment with new items of the same or greater ability, unless the equipment item is specifically identified on a permit.

3.4.4.8.3. Reassigning tasks among employees.

3.4.4.8.4. Assigning service contracts for services such as equipment repair or calibration, waste disposal, health physics or bioenvironmental engineering consultants.

3.4.4.9. Permittees must notify AFMOA/SGOR in writing within 15 calendar days when they change their mailing address or when people listed on the permit as users, or RSO, permanently end their duties or change their names.

3.4.4.10. Non-Air Force organizations bringing radioactive materials on Air Force installations or conduct operations using radioactive materials on Air Force installations must receive written approval by the installation commander or their appointee.

3.4.4.10.1. To get this approval, the non-Air Force organization must send a request to the installation RSO at least 30 calendar days before bringing the materials onto the installation. For contractors these requirements must be included in the statement of work.

3.4.4.10.2. Requests must be in writing and include:

3.4.4.10.2.1. A brief description of the proposed activities.

3.4.4.10.2.2. A copy of a current NRC or Agreement State license with current NRC Form 241 specifying specific use locations. 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. **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. Contractors from a Non-Agreement State do not require an NRC license or NRC Form 241 for NARM.

3.4.4.10.2.3. The name, local address, and telephone number for the responsible local representative and the name, address, and telephone number of the RSO named on their license.

3.4.4.10.2.4. A copy of that part of the Air Force contract describing work to be done at the installation and the inclusive dates of the work.

3.4.4.10.2.5. An acknowledgment that the installation RSO can make periodic checks to ensure that contractor personnel follow radiation safety practices to prevent exposures to Air Force personnel and avoid contamination of government property. In addition, the installation RSO must have authority to suspend contractor operations believed to be unsafe.

3.4.4.10.3. Agreement State licensees using NRC regulated materials must supply a copy of the NRC Form 241 approved by the installation's NRC Region according to 10 CFR Part 150.20. The form must specify the correct locations and dates of performance of licensed activities. State licensees may not work on Air Force or other installations where exclusive federal jurisdiction exists for more than 180 calendar days per calendar year without first getting an NRC license.

3.4.4.10.4. Non-Air Force organizations that do not have an NRC or Agreement State License with current NRC Form 241 and who are not DoE or DoE prime contractors exempted from licensing must contact AFMOA/SGOR for guidance and approval to use radioactive materials on an Air Force installation.

3.5. Posting Notices to Workers.

3.5.1. Permittees using NRC-licensed radioactive materials as well as overseas locations using radioactive materials must post NRC Form 3 and a supplemental notice regarding the availability of a permit and Air Force Master Materials License documentation according to 10 CFR Part 19.11, *Posting of Notices to Workers*. See Attachment 10 for the supplemental notice.

3.5.2. Permittees subject to the regulations in 10 CFR Part 21 must also post a copy of Section 206 of the Energy Reorganization Act of 1974 and a notice regarding the availability of the regulations and procedures adopted according to 10 CFR Part 21.6, *Posting requirements*. See **Attachment 10** for Section 206 of the Energy Reorganization Act of 1974.

3.5.3. Post the forms and notices in accordance with 10 CFR Part 21.

3.6. Control of Radioactive Material.

3.6.1. All nonexempt Byproduct, Source, and Special Nuclear Material, Naturally Occurring and Accelerator Produced Material (NARM) must be secured from unauthorized removal or access if they are stored in unrestricted areas. Materials that are used in unrestricted areas must be under the constant surveillance of an individual authorized under a valid USAF permit or NRC/agreement state license when not in storage. See 10 CFR Part 20 Subpart I, *Storage and Control of Licensed Material*, for more information.

3.6.2. All permitted radioactive sources and devices and nonexempt quantities of radioactive material in nonpermitted sources and devices must be inventoried as follows:

3.6.2.1. For permitted radioactive materials or devices inventory will be accomplished at the frequency specified in the permit.

3.6.2.2. For nonexempt sources and devices not requiring a permit, the inventory will be accomplished in accordance with guidance provided by the applicable T.O. or AFI.

3.6.3. Inventory documentation must be retained in accordance with the applicable CFRs, which are summarized in Attachment 11. Documentation must include the following:

3.6.3.1. Date of the inventory.

3.6.3.2. Model number and serial number of each source if assigned.

3.6.3.3. The identity of the source radionuclide and quantity.

3.6.3.4. The location of each source.

3.6.3.5. The signature of the RSO certifying the accuracy of the inventory.

3.7. Transferring Permitted Radioactive Material.

3.7.1. Transfer permitted or licensed radioactive material, nonexempt quantities of Naturally Occurring and Accelerator Produced Radioactive Materials, and devices that have these materials, only to:

3.7.1.1. An organization or person authorized to receive the materials under the terms of a USAF or USN permit, NRC license, or Agreement State License.

3.7.1.2. Air Force agencies with written authorization from AFMOA/SGOR.

3.7.1.3. DoE and DoE prime contractors who certify, in writing, that they are authorized to receive the materials.

3.7.1.4. Organizations or persons outside the United States under an export license of 10 CFR Part 110, *Export and Import of Nuclear Equipment and Material*.

3.7.1.5. Common and contract carriers, freight forwarders, and warehouse workers, for transporting or storing materials subject to 10 CFR Part 30.13, *Carriers*, 10 CFR Part 40.12, *Carriers*, and 10 CFR Part 70.12, *Carriers*. Package, label, and consign materials for shipment according to 10 CFR Part 71, *Packaging and Transportation of Radioactive Materials* and 49 CFR.

3.7.2. Make sure that the recipient has authority to receive the materials before making the transfer by:

3.7.2.1. Getting a copy of the recipient's NRC license, Air Force or Navy permit, or Agreement State license giving authority to take the materials, or

3.7.2.2. Getting a letter from the recipient that certifies authority to receive the materials and that gives the license or permit number, issuing agency, expiration date, type of materials, form of materials, and the authorized amount.

3.7.2.3. In emergencies, getting certification over the telephone followed up with a letter or message within 10 days.

3.7.3. Use NRC Form 741, **Nuclear Material Transaction Report**, when it is required by 10 CFR Part 40.64, *Reports* or 10 CFR Part 74.15, *Nuclear Material Transfer Reports*.

3.7.4. When shipping NRC specific or general licensable or permittable (e.g. NARM) radioactive materials, verify their receipt at the intended destination. Verification of receipt in writing by the recipient is the preferred method. If for some reason this cannot be accomplished, telephone confirmation may be used if it is documented and includes name, number and position of the person verifying the receipt and date of the conversation. When receiving materials from another Air Force organization or when requested by a non-Air Force shipper, confirm receipt in writing. For items shipped to and from the depot, documentation in Defense Logistics Agency's Defense Standard System is sufficient.

3.7.5. Report transfer of generally licensed material to the NRC as required by 10 CFR Part 31.5.

3.7.6. Keep records of all transfers according to AFMAN 37-139, *Disposition of Air Force Records - Records Disposition Schedule* (formerly AFR 4-20V2).

3.8. Transporting Radioactive Material.

3.8.1. Air Force activities shipping or transporting radioactive materials must follow US Department of Transportation (DoT) or US Postal Service (USPS) regulations. For compliance with DoT and USPS regulations, see the guidelines in AFPD 24-2, *Preparation and Movement of US Air Force Material*.

3.8.2. Air Force activities shipping or transporting NRC licensed or permitted radioactive materials must follow 10 CFR Part 71 and 49 CFR 100 through 199.

3.8.3. The generating activity must identify radioactive material and items containing radioactive materials when sending to TMO for packaging and shipping. Identify:

3.8.3.1. Radionuclide.

3.8.3.2. Activity in units of Bq.

3.8.3.3. Chemical and physical form.

3.8.3.4. Item nomenclature.

3.8.3.5. Stock number (if applicable).

To convert from units of curies (Ci) to Bq:

$$1 \text{ Ci} = 3.7 \times 10^{10} \text{ Bq}$$

$$1 \text{ millicurie} = 3.7 \times 10^7 \text{ Bq}$$

$$1 \text{ microcurie} = 3.7 \times 10^4 \text{ Bq}$$

3.9. Managing and Securing Radioactive Waste and Excess Materials.

3.9.1. Permittees must account for all radioactive materials and items containing or contaminated with radioactive materials pending disposal.

3.9.2. Permittees must secure radioactive material against access by unauthorized persons.

3.9.3. Permit and installation RSOs jointly prepare rules for waste management, according to Attachment 6, by considering local conditions such as quantities and types of waste produced, where waste is generated, and the location and configuration of available storage.

3.9.4. A USAF permit authorization for all radioactive waste storage areas used for permitted or licensed quantities of Byproduct, Source or Special Nuclear Material wastes and nonexempt quantities of Naturally Occurring or Accelerator Produced Radioactive Material wastes is required.

3.9.5. Storage of waste from more than one permit at a single location or otherwise co-mingling waste from more than one permit is prohibited unless specifically authorized by the RIC Secretariat. All waste held in a storage area must be possessed under a single permit.

3.9.6. Permittees must prepare wastes for shipment and disposal in accordance with Attachment 6.

3.9.7. Collection or storage of radioactive wastes for more than 1 year without written approval from AFMOA/SGOR is prohibited. All avenues of potential transfer or disposal must be exhausted before long term storage will be approved including:

3.9.7.1. Transfer to another Air Force Permittee or NRC or Agreement State Licensee for use.

3.9.7.2. Return to item manager or manufacturer.

3.9.7.3. Transfer to another Air Force Permittee or NRC or Agreement State Licensee for recycling.

3.9.7.4. Decay-in-storage, if authorized by permit condition.

3.9.7.5. Disposal by release into sanitary sewer, if authorized by permit condition.

3.9.7.6. Transfer for disposal at a land burial site.

3.10. Managing and Remediating Low Level Radioactive Waste Burial Sites.

3.10.1. Manage and remediate LLRW burial sites according to AFI 32-7020, *The Environmental Restoration Program* and policies established by HQ USAF/IL and this instruction. (NOTE: Remediation of radiological waste burial sites requires prior approval by AFMOA/SGOR).

3.10.2. Annually, the installation Civil Engineer and installation RSO must survey all LLRW burial sites on the installation to ensure they are being maintained in accordance with Attachment 5.

3.10.3. Installations may not characterize the site by invasive methods or exhume the site before making an exhaustive effort to find records on past uses of radioactive materials on the installation and the use of the burial site. The installation environmental manager and the installation RSO must jointly review all records located and agree on the meaning of any data found and proposed actions.

3.10.4. Any agency performing intrusive characterization or site exhumation involving potential NRC regulated material must have:

3.10.4.1. A NRC or Agreement State radioactive materials license that authorizes remediation activities or

3.10.4.2. An Air Force or Navy permit that authorizes remediation activities; and

3.10.4.3. Experience with site decommissioning.

3.10.5. Normally, installations may undertake invasive characterization only if they intend to exhume the site. Penetrating a site risks breaching containment and generating radioactive wastes that need control and disposal. Penetrating a site may also release wastes in quantities that dictate a prompt total exhumation.

3.10.6. Air Force organizations are not authorized to possess radioactive investigation derived wastes or radioactive remediation wastes unless authorized by a specific permit.

3.10.7. Work plans and health and safety plans for remediation of radioactive waste burial sites, to include waste disposal procedures, must be coordinated as follows:

3.10.7.1. All plans will be submitted to AFIERA/SDRH, Air Force Radioactive and Mixed Waste Office, DSN 240-3486) for approval during the project planning stage.

3.10.7.2. Plans for sites containing or suspected to contain only 91b Materials shall be submitted to the Directorate of Nuclear Surety of the Air Force Safety Agency (AFSC/SEW), Kirtland AFB NM.

3.10.7.3. Plans for sites containing or suspected to contain Byproduct, Source, or Special Nuclear Material as defined in Title 10, Code of Federal Regulations (CFR) Parts 30, 40, and 70 shall be submitted to the RIC Secretariat (AFMOA/SGOR) for review.

3.10.7.4. Plans for sites containing or suspected to contain Naturally Occurring and Accelerator Produced Radioactive Materials shall be submitted to the RIC Secretariat (AFMOA/SGOR) for review.

3.10.7.5. Sites containing or suspected to contain mixtures of the above types of materials or must be handled on a case-by-case basis. Contact AFSC/SEW and/or AFMOA/SGOR for guidance on sites containing mixtures of the above types of materials.

3.10.7.6. If, during the course of remediation, a site is found to contain NRC Regulated or Naturally Occurring and Accelerator Produced Radioactive Materials where they were not expected, work must stop and the Installation RSO must immediately notify AFMOA/SGOR. The project manager will then be required to submit the remediation plan to AFMOA/SGOR.

3.10.8. Final reports of remediation of all sites containing radioactive material shall be sent to AFMOA/SGOR, 110 Luke Ave, Room 405, Bolling AFB DC 20332-7050 for archival purposes.

3.11. Reporting Radioactive Materials Incidents and Accidents.

3.11.1. Radioactive Materials Incident and Accident Reports have been assigned Report Control Symbol RCS: HAF-SG (AR) 9466. This report is designated emergency status code C-1. Continue reporting during emergency conditions, priority precedence. Submit data requirements assigned this category as prescribed or by any means to ensure arrival on the established due dates. Continue reporting during MINIMIZE. Follow reporting criteria and times limits in Attachment 7. See Attachment 8 for a general checklist.

3.11.2. The permittee, the permit RSO, and the installation RSO must each make sure that AFMOA/SGOR gets reports required by **Attachment 7**. Report an incident if you have any doubt about whether it requires reporting.

3.11.3. Report incidents initially by telephone (installations outside the United States may report by message) and confirm by telefax or message. Report to:

3.11.3.1. AFMOA/SGOR, 110 Luke Ave, Room 405, Bolling AFB DC 20332-7050; DSN 297-4313 or commercial prefix (202) 767-4313. FAX: DSN 297-5302.

3.11.3.2. To report after duty hours, contact the on-call AFMOA/SGOR duty officer at Beeper no. 1-888-425-3861. Also call the Bolling AFB Command Post, DSN 297-4011 or (202) 767-4011. Give your name, organization, DSN and commercial phone numbers. State that you are calling with a "radioactive material incident report" and ask for the AFMOA/SGOR duty officer.

3.11.4. Time limits for reports start when the event occurs or when you first discover it. For incidents requiring an immediate report, the time limit for the report is 3 hours. Include as much of the information outlined in **Attachment 8** as is available, but do not delay reporting if you have not collected all the information.

3.11.5. AFMOA/SGOR directs follow-on written reports or information needed to meet NRC rules.

3.11.6. Send a copy of all written reports to the host installation and owning installation MAJCOM Bioenvironmental Engineer.

3.11.7. The requirements in **3.11.1** through 3.11.6 are separate from the reporting requirements of AFI 10-206, *Reporting Instructions*, and AFI 91-204. This instruction does not address reporting of incidents or accidents involving only nuclear weapons, nuclear weapons parts, reactors and fuel assemblies, and space systems exempted from NRC regulatory authority under Section 91b of the AEA.

3.11.8. EPA regulations require reporting releases of radioactive materials listed as hazardous substances under 40 CFR 302. EPA lists some of the chemical forms of radioisotopes and many of the non-radioactive chemical constituents that may mix with radioisotopes as a result of an industrial process. Reporting spills of radionuclides or mixed materials to the environment under EPA hazardous materials regulations are according to AFI 32-4002. These reports are separate from those under this instruction.

3.11.9. The installation RSO must set up rules approved by the installation commander, for telling the state radiation control director through installation public affairs channels of incidents that threaten the public with exposure to radiation, or pose a potential threat. State officials need facts (subject to security restrictions on classified information) about radiological incidents involving real or potential

exposure to off-installation populations or the accidental release of radioactive materials to the environment. Report to state officials about:

3.11.9.1. An uncontrolled nuclear reactor criticality incident resulting in damage to the reactor core or release of fission products from the reactor core to the surrounding environment or atmosphere. If specific rules for public notice under the reactor operating license or permit differ from this instruction, follow them.

3.11.9.2. An inadvertent rupture of a radioisotope power system containment capsule or a reactor fuel element that results in release of contamination outside of the controlled area or to the environment.

3.11.9.3. A loss of control of radioactive material that presents a real or potential hazard to off-installation populations, such as:

3.11.9.3.1. A spill or unplanned release of radioactive material large enough to require emergency response by individuals outside the using unit or work center.

3.11.9.3.2. The discovery of any detectable levels of radioactive material tracked or transferred off the installation.

3.11.9.3.3. A loss of radioactive material under circumstances that could result in the material leaving the installation.

3.11.9.4. Any theft of radioactive material.

3.11.10. Safeguard classified information when making reports. Take special care if also reporting and investigating the incident or accident under AFI 91-204 to ensure that reports sent to AFMOA/SGOR do not contain privileged information.

3.11.11. By Federal law, the Air Force must give the NRC certain types of information normally protected from release. When getting facts about the cause of an incident or accident and the involvement of persons for reports under this instruction, do not promise confidentiality of information.

3.12. Response to Radioactive Materials Incidents and Accidents.

3.12.1. Follow rules in AFI 91-204; AFI 41-106, *Medical Readiness Planning and Training*; and this instruction.

3.12.2. Under no circumstances accept possession of radioactive material from civilian sources (i.e., scrapyards, private individuals, etc.) unless approved by the USAF RIC.

3.12.3. Ensure adequate precautions are taken to prevent possible radiological contamination of personnel or equipment, and to minimize the spread of any contamination, which might be present. Protective actions to be considered include:

3.12.3.1. Ensure response personnel use protective equipment such as gloves, respirators or protective clothing when responding to accidents potentially involving radioactive material.

3.12.3.2. Ensure radiation detection equipment suitable for detecting the radiation present (i.e., alpha, beta, gamma) is available and personnel know how and when to use it.

3.12.3.3. If radioactive contamination is determined to be present, take action as soon as possible to identify, notify and assess those initial responders or other personnel who might have been contaminated during initial life saving operations.

3.12.3.4. Collect and segregate radioactive material at the incident/accident site once immediate life saving and accident control actions are complete.

3.12.4. Be aware that when responding to aircraft accidents, the following items containing radioactive material may be present:

3.12.4.1. Licensed or permitted radioactive materials or items containing licensed or permitted radioactive materials in the cargo.

3.12.4.2. Munitions, ballast and counterweights made of depleted uranium.

3.12.4.3. Magnesium-thorium in airframe and engine parts.

3.12.4.4. Thorium-coated lenses and static elimination sources in target designators.

3.12.4.5. Radioluminescent exit markers, dials, and gauges.

3.12.4.6. Americium-241 Check Sources in LANTIRN systems.

3.12.5. For electron tubes, ignition and spark gaps, or other items containing exempt quantities of radioisotopes and presenting only a minimal hazard when broken, use gloves when handling and bag or wrap damaged units for disposal.

3.13. Investigating Radioactive Materials Incidents and Accidents.

3.13.1. Unless directed otherwise by higher authority, the permittee is responsible for investigating and preparing a report on events listed in paragraph 3.11 that involve permitted radioactive materials. The permit RSO normally does the investigation.

3.13.2. For reportable events not involving permitted materials, the commander of the involved organization is responsible for the investigation and report. The installation RSO normally performs the investigation.

3.13.3. Investigating an accident or incident according to AFI 91-204 may create the need for a separate report for the NRC. See paragraph **3.11.10.** for information about protecting classified information and consult with AFMOA/SGOR.

3.13.4. Send reports to AFMOA/SGOR with a copy to the host installation commander and RSO, the permit holder's MAJCOM functional manager, host installation, and owning MAJCOM bioenvironmental engineer.

3.13.5. The RIC will decide when an investigation of an event involving radioactive materials under this instruction is complete.

3.13.6. The NRC may independently investigate an incident or accident involving permitted or NRC-licensed radioactive materials to confirm Air Force reports or to decide whether the installation violated NRC regulations (see paragraph **3.17.**).

3.14. Disposing of license or permit exempt Radioactive Material.

3.14.1. Dispose of permitted or licensed and other nonexempt radioactive materials covered by this instruction according to 10 CFR Part 20, Subpart K, *Waste Disposal*. (Note: Nonexempt can also include NRC licensed exempt materials, which may be regulated by the individual state regarding disposal in the municipal landfill).

3.14.2. Disposal by transfer must follow the requirements of paragraph 3.7. and is subject to the restrictions of 10 CFR Part 20.2001, *General requirements*.

3.14.3. Dispose by land-burial in accordance with **Attachment 6**, and 10 CFR Part 20.2006, *Transfer for Disposal and Manifests*. Do not ship radioactive wastes from an Air Force installation for disposal without first getting instructions in writing from the Air Force Radioactive and Mixed Waste Office (AFIERA/SDRH (AFRMWO), 2402 E Drive, Brooks AFB TX 78235-5001).

3.14.4. Dispose of specific carbon-14 and tritium wastes according to 10 CFR Part 20.2005, *Disposal of Specific Wastes*.

3.14.5. Keep records of disposals according to 10 CFR Part 20.2108, *Records of Waste Disposal* as implemented in AFMAN 37-139.

3.14.6. Follow all federal, state, and local governing instructions that apply to the specific waste because of other hazardous physical or chemical properties.

3.14.7. Radioactive materials having a physical half-life of less than 65 days may be disposed of by decay-in-storage according to 10 CFR Part 35.92, *Decay-in-storage* if authorized by permit condition. Requests for permission to decay in storage nuclides with up to 120-day half-life may be authorized by the RIC.

3.14.8. Dispose of radioactive materials released into sanitary sewer systems according to 10 CFR Part 20.2003, *Disposal By Release Into Sanitary Sewerage* only when authorized by the permit and allowed by other local, state, and federal regulations. Disposal to the sanitary sewer as described in 10 CFR Part 20.2003 applies only to publicly owned treatment facilities. Installations with their own sewerage treatment facility must apply to AFMOA/SGOR for authorization to release radioactive materials in effluents in accordance with 10 CFR Part 20.2001.

3.14.9. Permittees may propose alternative disposal procedures to AFMOA/SGOR for approval.

3.14.10. Coordinate all disposals through the permit RSO, base RSO, and AFIERA/SDRH(AFRMWO).

3.15. Terminating Permits.

3.15.1. When an organization no longer requires radioactive materials listed on the permit, they shall request permit termination from AFMOA/SGOR within 30 days.

3.15.2. If a decommissioning plan is required in accordance with 10 CFR Part 30.36, submit it to AFMOA/SGOR for approval.

3.15.3. Execute the decommissioning plan, and properly dispose of all radioactive sources, materials, and contamination.

3.15.4. Send the following termination documents to AFMOA/SGOR:

3.15.4.1. A completed NRC Form 314, **Certificate of Disposition of Materials**.

3.15.4.2. A copy of all receipts confirming that materials were received by another permittee, or NRC or Agreement State Licensee, or shipped to a licensed broker for final disposal. **NOTE:** Do not simply send documents showing stock listed items were turned into installation supply.

3.15.4.3. The decommissioning report (if appropriate) showing no radioactive materials or residual contamination above limits for unrestricted release as prescribed in NUREG 1575, *Multi-Agency Radiation Survey and Sight Investigation Manual*.

3.15.4.4. A radiation survey report showing no residual radiation levels in use or storage areas above background.

3.16. Retaining Records. Records shall be kept for receipt, storage, distribution, use, transfer, and disposal of permitted or licensed radioactive materials in accordance with 10 CFRs Parts 19, 20, 30-36, 40, 70, 71, as implemented in AFMAN 37-139. Where instructions conflict, do not destroy records until further advised.

3.17. Inspecting Permit Holders and Enforcing Compliance.

3.17.1. The Air Force 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.

3.17.2. The permit type and scope sets the frequency and content of routine AFIA inspections.

3.17.3. For the inspection priority code assigned to each permit, refer to the cover letter issuing the permit or permit renewal. A priority 1 permit is a high priority permit inspected annually; a priority 3 permit is inspected only every three years. More frequent inspections are made to enforce compliance or evaluate a specific problem.

3.17.4. HPs or BEs assigned to AFIA/SG normally conduct the inspections.

3.17.5. Copies of Air Force inspection reports go to:

3.17.5.1. The permittee.

3.17.5.2. The owning and host-installation MAJCOM BE.

3.17.5.3. AFMOA/SGOR.

3.17.5.4. The NRC when approved according to AFI 90-201, *Inspector General Activities*.

3.17.6. Mark, safeguard, and handle these reports according to AFI 90-201, *Inspector General Activities*.

3.17.7. Permittees must report actions to correct noncompliance according to instructions from AFIA/SG.

3.17.8. The NRC regional offices conduct permit compliance inspections without notice as part of the NRC's continual assessment of the Air Force's licensing and inspection program.

3.17.8.1. NRC inspections may be concurrent with, or separate from, the Air Force's permit compliance inspections.

3.17.8.2. Following the inspection, NRC will send a formal inspection report to AFMOA/SGOR with a Notice of Violation (NOV) for any noncompliance.

3.17.8.3. AFMOA/SGOR will subsequently send a copy of the inspection to the permittee, and when required, request a written response detailing any corrective actions for NOV's noted.

3.17.8.4. AFMOA/SGOR will provide a copy of both the NRC inspection report and any written response from the permittee will be provided to AFIA.

3.17.9. The RIC or NRC may take enforcement action as a result of reported incidents, inspection findings, correspondence, or confirmed worker allegations.

3.17.10. The RIC takes administrative enforcement actions including:

3.17.10.1. Suspending or repealing authority to have or use radioactive materials.

3.17.10.2. Adding control measures to permits.

3.17.10.3. Repealing a person's authority to use or supervise use of radioactive materials.

3.17.11. Commanders and supervisors decisions on how to discipline individuals.

3.17.12. The NRC enforces administrative actions, fines, and criminal penalties against the Air Force or individuals. See 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*, gives:

3.17.12.1. NRC's enforcement policy.

3.17.12.2. The severity class of violations according to certain classes of activities.

3.17.12.3. The various enforcement options NRC may exercise.

NOTE: The NRC also issues press releases on enforcement actions.

3.18. Available Forms. For forms prescribed by this instruction, write or call AFMOA/SGOR.

PAUL K. CARLTON, JR., Lt General, USAF, MC, CFS
Surgeon General

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

5 USC 552a, (*Public Law 93-579*)

AFI 10-206, *Operational Instructions*

AFI 32-4001, *Disaster Preparedness Planning and Operations*

AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*

AFI 32-7020, *The Environmental Restoration Program*

AFI 32-7040, *Air Quality Compliance*

AFI 32-7042, *Solid and Hazardous Waste Compliance*

AFI 33-332, *Air Force Privacy Act Program*

AFI 40-402, *Using Human Subjects in Research Development Test and Evaluation*

AFI 40-403, *Clinical Investigations in Medical Research Guidance and Procedures*

AFI 41-106, *Medical Readiness Planning and Training*

AFI 48-119, *Medical Environmental Quality Programs*

AFI 48-125, *USAF Personnel Dosimetry Program*

AFI 90-201, *Inspector General Activities*

AFI 91-01, *Air Force Nuclear Weapons*

AFI 91-109, *Air Force Nuclear Reactor Program*

AFI 91-110, *Nuclear Safety Review and Launch Approval for Space or Missile Use of Radioactive Material and Nuclear Systems*

AFI 91-204, *Safety Investigations and Reports*

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Prevention, and Health (AFOSH) Program*

AFPD 24-2, *Preparation and Movement of Air Force Material*

AFPD 32-70, *Environmental Quality*

AFPD 40-2, *Radioactive Material (Non-Nuclear Weapons)*

AFPD 48-1, *Aerospace Medicine*

AFMAN 37-139, *Records Disposition Schedule* (formerly AFR 4-20V2)

AFR 161-16, *Control of Radioactive Material*

AFJI 23-504, *Radioactive Items in the DoD Supply Systems*

Atomic Energy Act (AEA) of 1954

DoD Directive 5400.11

DoDI 6055.8, *Occupational Radiation Protection*

Energy Reorganization Act of 1974 (Public Law 93-438)

MIL-STD-882B, *Systems Safety Program Requirements*

NUREG 1575, *Multi-Agency Radiation Survey and Sight Investigation Manual*

Privacy Act of 1974

Resource Conservation and Recovery Act (RCRA)

Title II of the Energy Reorganization Act of 1974 (Public Law 93-438)

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

Part 2, Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders

Part 19, Notices, Instructions and Reports to Workers: Inspection and Investigations

Part 20, Standards for Protection Against Radiation

Part 21, Reporting of Defects and Noncompliance

Part 30, Rules of General Applicability to Domestic Licensing of Byproduct Material

Part 31, General Domestic Licenses for Byproduct Material

Part 33, Specific Domestic Licenses of Broad Scope for Byproduct Material

Part 34, Licenses for Radiography and Radiation Safety Requirements for Radiographic Operations

Part 35, Medical Use of Byproduct Material

Part 36, Licenses and Radiation Safety for Irradiators

Part 40, Domestic Licensing of Source Material

Part 70, Domestic Licensing of Special Nuclear Material

Part 71, Packaging and Transportation of Radioactive Material

Part 74, Material Control and Accounting of Special Nuclear Material

Part 110, Export and Import of Nuclear Equipment and Material

Part 150, Exemptions and Continued Regulatory Authority in Agreement States

Title 29 Code of Federal Regulations (29 CFR), *Department of Labor*

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

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

Uniform Code of Military Justice (UCMJ), *Article 92*

Abbreviations and Acronyms

AEA—Atomic Energy Act of 1954

AFRMWO—Air Force Radioactive and Mixed Waste Office

ALARA—As Low As Reasonably Achievable

CERCLA—Comprehensive Environmental Response, Compensation, and Liability Act

CFR—Code of Federal Regulations

CRCPD—Council of Radiation Control Program Directors

DoD—Department of Defense

DoE—Department of Energy

DoT—Department of Transportation

DU—Depleted uranium

EPA—Environmental Protection Agency

LLW—Low level waste

NOV—Notice of Violation

NPDES—National Pollution Discharge Elimination System

NRC—Nuclear Regulatory Commission

NSN—National Stock Number

PN—Part number

RADIAC—Radiation Detection Instrumentation

RCRA—Resource Conservation and Recovery Act

RSO—Radiation Safety Officer

SSDR—Sealed Source and Device Registry

T.O.—Technical Order

UCMJ—Uniform Code of Military Justice

U.S.C.—United States Code

Terms

Accelerator Produced Radioactive Material—Radioactive material produced as the result of operating a particle accelerator.

Accident—For this instruction, an accident is an event involving a nuclear reactor, radioisotope power system, or radioactive material resulting in: (1) An uncontrolled nuclear reactor criticality resulting in damage to the reactor core or release of fission products from the reactor core to the surrounding environment or atmosphere, (2) A loss of control of radioactive material that presents a hazard to life, health, or property. This includes loss of control that may result in any person in an unrestricted area exceeding the limits for exposure to ionizing radiation as stated in 10 CFR Part 20 or (3) Any unexpected event involving radioactive material or radiation exposure which is serious enough to warrant the interest or action of officials or agencies outside the Air Force. This class includes: events having domestic or international implications, those which may cause inquiries by the public or press, and those requiring immediate notification to the NRC under 10 CFR Part 20.

Agreement State—Any state, territory, or possession of the United States that, by agreement with the NRC, has assumed regulatory authority over Byproduct, Source, and certain small quantities of Special Nuclear Material.

Air Force Master Materials License—The single NRC license issued to the Department of the Air Force delegating to the Air Force regulatory authority over Byproduct, Source, and limited quantities of Special Nuclear Material used by the Air Force.

Alternate Radiation Safety Officer—A person, named as such on the US Air Force Radioactive Material Permit, who is qualified to act as RSO when the primary RSO is absent. Unless otherwise requested by the permittee, the alternate RSO becomes the primary RSO when the named primary RSO leaves the organization.

Assistant Radiation Safety Officer—A person in training for the position of RSO, who may only act under the supervision of the RSO.

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

Byproduct Material—Radioactive material (except Source and Special Nuclear Material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using Source or Special Nuclear Material.

Committee—The US Air Force Radioisotope Committee.

Items—Instruments and manufactured articles constructed of or having radioactive materials as a component part, often assigned a NSN, normally procured, stored and distributed through Air Force logistics. Items include but are not limited to such devices as Chemical Agent Detectors, RADIAC sets, Lensatic compasses, dials and gauges. Items are not considered to include any loose radioactive material, radioactive contamination on other materials or in soil, or any material exhumed from a radioactive burial site.

Exclusive Federal Jurisdiction—Property under the exclusive control or ownership of the federal government that has been ceded legislative power by the state or has had such power reserved from grants to the states.

Human Use—The internal administration of radioactive materials, or the external administration of ionizing radiation from radioactive materials, to humans.

Incident—For this instruction, an incident is any event involving a nuclear reactor, radioisotope power system or, radioactive material that is not defined as an accident, or which may result in adverse public reaction. This includes possible premature release of information.

License—Written authorization from the NRC or an Agreement State to receive, possess, use, or transfer Byproduct, Source, or Special Nuclear Material. Written authorization from a State to receive, possess, use, or transfer naturally occurring radioactive material or accelerator produced radioactive material. Licenses will be either (1) General License published in NRC or Agreement State Regulations, that is effective without any need to send an application to, or which is effective to any applicant on registration with, the NRC or an Agreement State or (2) Specific License issued by the NRC or Agreement State to a named applicant who has filed an application authorizing acquisition, ownership, receipt, storage, use, transfer, and disposal of chemical or physical forms of radioisotopes specified in the license. This license has an expiration date renewable on application to the issuing authority. The license may be limited in

scope (authorizing only certain specific radioisotopes for limited users) or broad (authorizing the use of a wide variety of radioisotopes without regard to form, quantity, or use).

Low Level Radioactive Waste (LLRW)—Radioactive waste not classified as high level radioactive waste, transuranic waste, spent nuclear fuel, or Byproduct Material as defined in Section 11e(2) of the AEA (uranium or thorium tailings and waste).

Mixed Low Level Radioactive and Hazardous Wastes (Mixed Waste)—Low level radiological wastes that also contain chemical constituents that the EPA defines as hazardous in 40 CFR 261, *Identification and Listing of Hazardous Waste*.

NUREG—technical reports on various topics related to the regulation of nuclear energy published by Nuclear Regulatory Commission

Naturally Occurring Radioactive Material—Radioactive material that occurs in nature; e.g. radium-226

Nuclear Reactor—A facility using fissile materials in a self-supporting chain reaction (nuclear fission) to produce heat or radiation for both practical application and research and development.

Nuclear Regulatory Commission—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. Within the NRC, final authority rests with the five member Commission acting as a body.

Particle Accelerator—A device that accelerates charged particles to produce a beam of high-energy radiation or to produce radioisotopes.

Permit—tUS Air Force or US Navy radioactive material permit issued to a unit within the respective service under the authority of a master materials license authorizing use of specific radioactive material for specific purposes or activities.

Permittee—The commander or senior functional manager of the Air Force organization identified in block 1 of a permit.

Prescribed Dosage—The quantity of radiopharmaceutical activity as documented in (1) a written directive or (2) in the diagnostic clinical procedures manual or in any proper record according to the directions of the authorized user for diagnostic procedures.

Prescribed dose—(1) For Gamma stereotactic radiosurgery: The total dose as documented in the written directive, (2) For Brachytherapy: Either the total source strength and exposure time or the total dose, as documented in the written directive.

Radiation Safety Officer—An individual with specific education, military training, and professional experience in radiation protection practice appointed by a commander or the USAF Radioisotope Committee to manage radiation safety programs. The term "Radiation Safety Officer" is a functional title and does not denote a commissioned status or specialty code. An RSO should be the most technically qualified person available. The RSO must have the education, military training, and professional experience needed for the job. Take care when addressing RSO qualifications and duties to distinguish between installation and permit RSOs. Individuals appointed as the installation RSO may not always have the specific technical experience and training needed to qualify as the permit RSO.

Radioactive Item—a single unit or article constructed of or having radioactive materials as a component part

Radioactive Material—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.

Radioisotope Power System—A power system using the thermal energy produced by the radioactive decay of the unstable nuclei of certain isotopes as its energy source.

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 radioactive material. Restricted area does not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a restricted area.

SAFE HAVEN—Temporary storage provided Department of Energy classified shipment transporters at Department of Defense facilities in order to assure safety and security of nuclear material and/or non-nuclear classified material.

Section Ninety-one b (91b) Material—Radioactive material exempted from NRC licensing controls under Section 91b of the Atomic Energy Act of 1954, as amended, in the interest of national defense.

Source Material—Uranium or thorium or any combination thereof in any physical or chemical form; or ores that have, by weight, one-twentieth of 1 percent (0.05 percent) or more of uranium, thorium, or any combination thereof. Source Material does not include Special Nuclear Material.

Special Nuclear Material—Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235; any other material that the NRC determines to be Special Nuclear Material and any material artificially enriched by the foregoing. Special Nuclear Material does not include Source Material.

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 radioactive materials or accessible to a member of the public.

USAF Radioactive Material Permit—Written authorization from the USAF Radioisotope Committee for Air Force organizations to receive, possess, use, distribute, store, transport, transfer and dispose of radioactive materials. Permits parallel NRC licenses in applications and scope. Unlike the NRC, a single permit may authorize Byproduct, Source, Special Nuclear Material, Accelerator Produced Radioactive Material and Naturally Occurring Radioactive Material.

USAF Radioisotope Committee (RIC, Committee)—A committee set up according to the Air Force Master Materials License to coordinate the administrative and regulatory aspects of licensing, receiving, possessing, using, distributing, storing, transporting, transferring and disposing of all radioactive materials in the Air Force except that transferred from the Department of Energy to the Department of Defense in nuclear weapon systems, certain radioactive parts of weapons systems and nuclear reactor systems, parts and fuel controlled under Section 91b of the AEA.

User—For this instruction, a user is (1) An organization authorized by a USAF Radioactive Material Permit to have and use radioactive materials, or (2) A person specifically named on a USAF Radioactive Material Permit as authorized to handle or to supervise handling radioactive materials listed on the permit, or (3) A person named in a permit condition by a radiation safety committee with local approval authority to handle or supervise the handling of radioactive materials listed on the permit.

Written Directive—An order in writing for a specific patient, dated and signed by an authorized user before the administration of any of the following: (1) For any administration of quantities greater than 30 microcuries of either sodium iodide I-125 or I-131, the dosage, (2) For a therapeutic administration of a radiopharmaceutical other than sodium iodide I-125 or I-131, the radiopharmaceutical, dosage, and route of administration, (3) For gamma stereotactic radiosurgery: target coordinates, collimator size plug pattern, and total dose, (4) For teletherapy: the total dose, the dose per fraction, treatment site, and overall treatment period, (5) For high-dose-rate remote afterloading brachytherapy: the radioisotope, treatment site, and total dose, (6) For all other brachytherapy: Before implantation; the radioisotope, number of sources, and source strengths, and after implantation but before to completion of the procedure; the radioisotope, treatment site, and total source strength and exposure time (or, equivalently, the total dose).

Attachment 2

LICENSE EXEMPT QUANTITIES

A2.1. These exemptions apply to accelerator produced and naturally occurring radioisotopes and are in addition to those in 10 CFR Part 30.71, *Schedule B*.

Exempt Quantities:

| <u>Radionuclide</u> | <u>microcuries</u> | <u>Radionuclide</u> | <u>microcuries</u> |
|---------------------|--------------------|---------------------|--------------------|
| Cesium-129 | 100 | Cobalt-57 | 100 |
| Gallium-67 | 100 | Germanium-68 | 10 |
| Gold-195 | 10 | Indium-111 | 100 |
| Iodine-123 | 100 | Iron-52 | 10 |
| Potassium-43 | 10 | Rubidium-81 | 10 |
| Sodium-22 | 10 | Yttrium-87 | 10 |

EXCEPTIONS: These exemptions do not apply to radioactive material in any food, beverage, cosmetic, drug, or other commodity or product designed for ingestion or inhalation by, or application to, a human being. Reference document: Conference of Radiation Control Program Directors, "Suggested State Regulations for Control of Radiation", Vol. I, 8th Edition, 1990, Part C, Appendix B

Attachment 3**APPLYING FOR A USAF RADIOACTIVE MATERIAL PERMIT****A3.1. Regulatory control of radioactive material in the Air Force is accomplished as follows:**

A3.1.1. No control of items obtained, manufactured, and distributed by a licensee having a specific NRC license authorizing exempt distribution or otherwise exempted by NRC in accordance with 10 CFR or Attachment 2.

A3.1.2. Incorporation of appropriate controls into applicable system technical orders or other Air Force instructions

A3.1.3. Issuance of a Template Permit: A Template Permit is issued for sealed source items posing minimal radiological risk and having standardized conditions of use. Such items can contain NARM or be generally or specifically licensed or permitted.

A3.1.4. Issuance of a Non-Template Permit: Typically issued for large scope, large quantity radioactive material use situations which require custom applications and conditions.

A3.2. Exempt items not controlled by this AFI:

A3.2.1. Electron tubes, spark gaps, timepieces covered under 10 CFR Part 30.15.

A3.2.2. Smoke detectors specified in 10 CFR Part 30.20.

A3.2.3. Thorium lantern mantles.

A3.2.4. Other items that are distributed by a manufacturer having a specific license authorizing exempt distribution.

A3.3. Items Controlled by Technical Order, Air Force Instructions or permits:

A3.3.1. Radium dial, gauges, buttons or other radioactive material contained on static display aircraft (see AFI 84-103).

A3.3.2. Airframe components constructed of magnesium-thorium alloy (individual system technical orders).

A3.3.3. Airframe counterweights constructed of depleted uranium (individual system technical orders).

A3.3.4. Individual storage areas for 30 mm API munitions having depleted uranium penetrators are controlled by a central distribution permit.

A3.3.5. Exit signs.

A3.4. Template Permits:

A3.4.1. The following radioactive items are covered by Template Permits:

A3.4.1.1. M8A1 Chemical Agent Detectors using 250 microcuries of Americium-241, Chemical Agent Monitors using 15 millicuries of Nickel-63, Automatic Chemical Agent Detector and Alarm (ACADA) containing two 15-millicurie Nickel-63 sources.

A3.4.1.2. Inflight Blade Integrity System (IBIS) Indicators using either 100 or 500 microcuries of Strontium-90.

A3.4.1.3. LANTIRN Pods using two, 4 microcuries Americium-241 sources.

A3.4.1.4. Gas Chromatographs.

A3.4.1.5. D-0062 containing 150 millicuries of Cesium-137 and AM/UDM-6 containing 2 microcuries of Plutonium-239, PMEL Calibration Sources.

A3.4.1.6. Niton XRF Lead Paint Analyzers containing Cd-109.

A3.4.2. Persons desiring to use the above devices should contact AFMOA/SGOR or visit our web site at <http://sg-www.satx.disa.mil/moasgor/>.

A3.5. Non-Template Permits: Radioactive Material uses not identified in A34.1 above require a Non-Template permit.

A3.5.1. Applying for Non-Template Permits: For permit applications other than those listed in A.3.4., a memo of intent should be sent to AFMOA/SGOR indicating name of the proposed permittee and type of use desired (i.e., medical, radiography, unsealed radioactive material, irradiator, source material, special nuclear material, depot level PMEL). Upon receipt, AFMOA/SGOR will provide a binder with all the necessary information for the required permit application. Upon completion, the application should be placed with the appropriate tabs in the provided binder and returned to AFMOA/SGOR for processing. A decommissioning financial assurance cost estimate to satisfy the requirements of 10 CFR 30.35, 10 CFR 40.36, or 10 CFR 70.25 must be included with your application. The can assist in developing your cost estimate.

A3.5.2. In Vitro Radioimmunoassay. Air Force organizations that wish to use radioactive materials for in vitro radioimmunoassay according to 10 CFR Part 31.11, *General License for Use of Byproduct Material for Certain In Vitro Clinical or Laboratory Testing*:

A3.5.2.1. Must have an existing permit that authorizes medical use of radioactive materials, or must get a NRC registration number by sending a completed NRC Form 483, **Registration Certificate-In Vitro Testing with Byproduct Material Under General License**, to AFMOA/SGOR.

A3.5.2.2. The laboratory director must sign NRC Form 483. Registration under this paragraph also authorizes use of cobalt-57 for in vitro testing in quantities of 10 microCuries or less per kit.

A3.5.2.3. Conduct and keep a record of quarterly radiation swipe surveys when using radionuclides other than tritium and carbon-14.

A3.5.3. Amending a Non-Template Permit: To amend a Non-Template permit, send the amendment request to AFMOA/SGOR. This can be a fax followed up with a memo. The memo should be as detailed as possible, especially if it includes the changing of procedures, which could affect exposure levels to staff or the public. Details must include: source device, amount, type, manufacturer, how the source or device is to be used, locations of the source, exposure levels if they have changed, and any new procedures. The amendment request will be evaluated by SGOR staff and approved, disapproved, or a discrepancy letter will be issued to the requesting organization. In most cases a phone call will clear up any discrepancies in the amendment request.

A3.6. Routing and Timelines for Permit Actions:

A3.6.1. Send all applications for permits (new, amendments, renewal and terminations) to the host installation RSO for their information.

A3.6.2. Then send the application to AFMOA/SGOR with a courtesy copy to the MAJCOM Bioenvironmental Engineer.

A3.6.3. Ensure a signed original of the application reaches AFMOA/SGOR.

A3.6.4. Send initial applications for Template permits so they arrive at AFMOA/SGOR at least 30 calendar days before you need the item.

A3.6.5. Send initial memo of intent for Non-Template permits to AFMOA/SGOR no later than 90 days before the desired use date. Submit earlier if the use involves new construction. Typical uses requiring extended processing time include:

A3.6.5.1. New research or laboratory facilities.

A3.6.5.2. Nuclear medicine programs.

A3.6.5.3. Major industrial operations.

A3.6.5.4. Multi-Curie irradiators or radiographic sources.

A3.6.5.5. Firing ranges using DU.

A3.6.5.6. Remediation activities.

A3.6.6. Renewal applications for Non-Template permits must be completed without reference to any earlier documents. AFMOA/SGOR will automatically provide a binder for preparing and submitting the renewal application for Non-Template permits 4 months prior to permit expiration. A.3.6.7. For Template permits, AFMOA/SGOR will send a reminder notice 90 days prior to permit expiration requesting the permittee submit a new Acceptance of Responsibility memo (see AFMOA/SGOR Web Page at <http://sg-www.satx.disa.mil/moasgor/>). Once this is received, a renewed permit will be prepared and provided to the permittee.

A3.6.7. Changes submitted as part of a renewal application for Non-Template permits must be identified in a cover letter. These changes will not take effect until the renewal is approved by AFMOA/SGOR. Routine renewals have a lower priority than new applications and amendments.

Attachment 4**MINIMUM TRAINING AND EXPERIENCE REQUIRED FOR PERMIT RSO**

A4.1. Static Meters, Static Eliminators, and Ion Generating Tubes Approved for Use by 10 CFR Part 31.3, *Certain Devices and Equipment*. RSO must have 4 hours of documented training in radiation protection for the radioactive materials used and the regulatory requirements of the general license or permit. Topics include accounting, reporting incidents or transfers, using equipment according to manufacturer's instructions and precautions, transferring, shipping, and disposing of equipment.

A4.2. Self-Luminous Aircraft Safety Devices Approved for Use by 10 CFR Part 31.7, *Luminous Safety Devices for Use in Aircraft*. RSO must have 4 hours of training following the guidelines in A4.1.

A4.3. Strontium-90 Ice Detection Devices Approved for Use by 10 CFR Part 31.10, *General License for Strontium-90 in Ice Detection Devices*. RSO must have 4 hours of training following the guidelines in A4.1.

A4.4. Gas Chromatographs and Self-Luminous Exit Signs Approved for Use by 10 CFR Part 31.5, *Certain Measuring, Gauging or Controlling Devices*. RSO must have 4 hours of training following the guidelines in A4.1.

A4.5. Byproduct material approved for in vitro testing by 10 CFR Part 31.11. RSO must have formal training as physicians, veterinarians, or clinical laboratory officers or superintendents.

A4.6. Cobalt-57 in Less than 10 Microcuries Per Kit for In Vitro Testing . RSO must have formal training as physicians, veterinarians, or clinical laboratory officers or superintendents.

A4.7. Self-Contained Irradiators. RSO must have 40 hours of hands-on experience on the irradiator and 24 hours of formal radiation safety training, including regulatory requirements of the NRC for radioactive material accounting, reporting, using materials according to manufacturer's instructions and precautions, transferring, shipping, and disposing of materials.

A4.8. Fixed Gauges. RSO must have 40 hours of formal RSO training, including regulatory requirements of the NRC for radioactive material accounting, reporting, using material according to manufacturer's instructions and precautions, transferring, shipping, and disposing of materials and servicing and leak testing of the specific gauge. To qualify as an instructor for users, RSO need 80 hours of radiation safety training and experience using the specific gauge.

A4.9. Portable Gauges. RSO must have 40 hours of formal RSO training including regulatory requirements of the NRC for radioactive material accounting, reporting, use according to manufacturer's instructions and precautions, transfer, shipping and disposal and completion of the manufacturer's user training course. To qualify as an instructor, RSO needs 80 hours of radiation safety training and experience using the specific gauge.

A4.10. Generally Licensed Devices Approved for Use by 10 CFR Part 31.5. Unless specified in another paragraph of this attachment, RSO must have 4 hours of training following the guidelines in A4.1.

A4.11. Stock Listed Sealed Sources and Devices listed in the NRC SSDR not exceeding 25 curies of tritium gas or krypton-85, 150 millicuries of a beta- or gamma-emitting radionuclide, or 1 millicurie of alpha-emitting radionuclide in a single source or device used by a specific Byproduct Material licensee or permittee, RSO must have 40 hours of formal RSO training as outlined in paragraph A4.8. or other training acceptable to AFMOA/SGOR. RSO should have prior experience handling radioactive material. AFMOA/SGOR approves all qualifications.

A4.12. Sealed Forms of Source Material. RSO must have 40 hours of formal RSO training as outlined in paragraph A4.8. and 3 weeks of on-the-job training and experience in handling Source Material under an approved user. AFMOA/SGOR may require added training and experience for specific uses.

A4.13. Sealed Forms of Special Nuclear Material . RSO must have 40 hours of formal RSO training as outlined in paragraph A4.8. and 3 weeks of on-the-job training and experience handling Special Nuclear Material under an approved user. AFMOA/SGOR may require added training and experience for specific uses.

A4.14. Panoramic Dry/Wet and Self-Contained Wet Irradiators. RSO must have 40 hours of formal RSO training as outlined in paragraph A4.8. and 3 months of full-time experience using the same type irradiator, including 4 weeks of operating the irradiator controls.

A4.15. Medical Permit Authorizing Human Use Of Radioactive Materials for Diagnosis or Therapy. For RSO requirements, see 10 CFR Part 35.900 and 35.901.

A4.16. Type C Permit of Broad Scope. RSO must have:

A4.16.1. A college degree at the bachelor level or equivalent training and experience in the physical or biological sciences or engineering.

A4.16.2. Forty hours of formal RSO training including instruction in the safe handling of radioactive material, characteristics of ionizing radiation, units of radiation dose and quantity, radiation detection and instrumentation, biological hazards of exposure to radiation, regulatory requirements of the NRC for radioactive material including accounting, reporting, using, transferring, shipping and disposing of radioactive materials that the RSO will use on the job.

A4.16.3. One year of prior experience with radioactive materials and devices. Professional experience may include managing and administering a radiation safety program related to the types, quantities, and uses of the radioactive materials requested for use. Prior experience as a named licensee or permit RSO is desirable.

A4.16.4. AFMOA/SGOR reviews qualifications, including past performance on other licenses or permits. The review may include an interview of the applicant RSO.

A4.17. Type B Permit of Broad Scope . RSO must have:

A4.17.1. A college degree at the bachelor level or equivalent training and experience in the physical or biological sciences or engineering.

A4.17.2. Forty hours of formal RSO training including instruction in the regulatory requirements of the NRC as outlined in A4.16.2. Additional formal training in radiation safety management, radiation dose assessment, and emergency response is desirable.

A4.17.3. Two to 3 years prior experience with radioactive material and devices. Professional experience must include managing and administering a radiation safety program related to the types, quantities, and uses of the radioactive materials that the applicant would use on the job. Prior experience as a named license or permit RSO is required.

A4.17.4. AFMOA/SGOR reviews qualifications, including the applicant RSO's past performance on other licenses or permits. The review may include an interview of the RSO.

A4.18. Type A Permit of Broad Scope . RSO must have:

A4.18.1. A college degree at the bachelor level, or equivalent training and experience, in the physical or biological sciences or in engineering.

A4.18.2. Forty hours of formal RSO training including instruction in the regulatory requirements of the NRC as outlined in A4.16.2. Additional formal training in radiation safety management, radiation dose assessment, and emergency response is desirable.

A4.18.3. Five years prior experience with radioactive material and devices. Professional experience must include the management and administrative requirements in paragraph A4.17.3. Prior experience as a named license or permit RSO is required.

A4.18.4. AFMOA/SGOR reviews qualifications, including the applicant RSO's past performance on other licenses or permits. The review may include an interview with the RSO.

A4.19. Medical Broad Scope Permit. RSO must have the qualifications outlined in 10 CFR Part 35.900. *NOTE:* RSO training and experience requirements for nonmedical uses of radioactive materials in a medical facility are determined by referring to the appropriate paragraph above.

Attachment 5

MANAGING LOW LEVEL RADIOACTIVE WASTE BURIAL SITES

A5.1. Annual surveys of LLRW burial sites should include the following elements:

A5.1.1. Visual inspection of the integrity of pipe caps or other closure devices that extend above ground.

A5.1.2. If RSO sees signs of intrusion or damage to the site, survey it for radiation with both alpha and beta-gamma detecting survey instruments.

A5.1.3. Document findings on each requirement in a report and refer maintenance problems to the installation civil engineer.

A5.1.4. Keep the original copy of the report and give an informational copy to the installation environmental coordinator.

A5.2. The installation Civil Engineer will do the following:

A5.2.1. Ensure sites are identified in Tab C-1 of the Installation Master Plan.

A5.2.2. Post site boundaries on each accessible side with radioactive material warning signs stating that the site contains buried radioactive materials and keep the signs in good repair.

A5.2.3. Limit site access with a strong physical barrier such as a chain link fence or other measures that prevent exposure of individuals to radioactive material.

A5.2.4. Protect the soil surface against erosion using grasses or other ground covers such as stone or gravel that promote site stability. Keep the site clear of deep-rooted shrubs and trees.

Attachment 6

MANAGING AND DISPOSING OF RADIOACTIVE WASTE

A6.1. Requirements and Rules for Waste-Generating Activities.

A6.1.1. Control access to laboratories or rooms where radioactive wastes are generated or stored (storage area must provide sufficient protection to prevent degradation of packaging or the waste) when they are vacant or unattended.

A6.1.2. Maintain a log to document information about radioactive materials put into radioactive waste containers and to record radiation levels. Include:

A6.1.2.1. Name of the installation.

A6.1.2.2. The building and number of the room containing radioactive waste containers.

A6.1.2.3. The types of containers and the identification number assigned to each container.

A6.1.2.4. The date items were placed in the container.

A6.1.2.5. A description of items placed in each container. For stock listed items, record each item's name and stock number. For sealed sources, record the manufacturer, date manufactured, model, and serial number, if available. Identify other articles by their common names, for example, contaminated gloves, rags, and paper chucks.

A6.1.2.6. The radionuclides in an item or contaminating an item.

A6.1.2.7. The known or estimated activity in curie units. Do not abbreviate unit prefixes. Spell out prefixes such as micro and milli.

A6.1.2.8. The physical form of each radionuclide, for example, gas, solid, or liquid. DO NOT ABSORB LIQUID RADIOACTIVE WASTE INTENDED FOR LAND DISPOSAL UNLESS APPROVAL IS FIRST OBTAINED FROM THE AIR FORCE RADIOACTIVE WASTE PROGRAM OFFICE (SEE A6.3).

A6.1.2.9. The chemical form of each radionuclide, for example, oxide, chloride, and the name of the labeled chemical compound.

A6.1.2.10. The name and initials of the individual making the entry.

A6.1.2.11. Meter readings in rad (gray) per hour measured outside the containers.

A6.1.2.12. The name and initials of the individual conducting the survey.

A6.1.2.13. Permit RSO must coordinate disposals with the base RSO.

A6.1.3. Survey radioactive waste storage areas periodically to ensure compliance with 10 CFR Part 20 and document the results.

A6.1.4. Maintain records of all disposals of radioactive waste for the duration of the permit.

A6.1.5. Before sealing a waste container, permit RSO must:

A6.1.5.1. Check the user entries in the waste log for the container for completeness and visually inspect the contained waste. To prevent contamination of personnel or the area, do not remove waste from the container or physically handle it.

A6.1.5.2. Survey the container to make sure that detected radiation levels correspond to the entries recorded in the waste log. **NOTE:** A container storing a low-energy beta emitter like carbon-14 or small quantities of a low-energy gamma emitter like iodine-125 would not have high levels of x or gamma radiation. Nonetheless, gamma surveys should be conducted on these containers to make sure that high energy gamma emitting sources were not improperly placed in the container or that bremsstrahlung is not being produced in significant quantities to cause a potential hazard.

A6.1.5.3. If observations or measurements give unexpected results, the permit RSO must secure the waste and records and investigate to resolve discrepancies.

A6.1.6. After the RSO's audit, close and seal the plastic bag or container for transfer and disposal.

A6.2. Requirements and Rules for Long-Term Storage of Sealed Radioactive Waste Containers.

A6.2.1. Permit RSO must maintain a listing of all sealed radioactive waste storage containers and semiannually account for and inspect the integrity of each container. Maintain a record of the inspection for 5 years.

A6.2.2. A copy of the waste inventory sheet must be attached to each waste container kept in long-term storage.

A6.2.3. Do not open waste containers to conduct periodic inspections.

A6.2.4. During the last inspection of radioactive waste containers prior to removing the containers for transfer or disposal, the permit RSO must check the integrity of the container and seal, and correctness of log entries, container labeling, survey documentation.

A6.2.5. After disposal or transfer of a waste container, the permit RSO files inventory sheets and waste logs in the permanent records of the permit authorizing long-term storage of the waste.

A6.3. Disposal by Decay-in-Storage: Permittees authorized to dispose by decay-in-storage will follow the record keeping requirements stated in 10 CFR Part 35.92(b).

A6.4. Disposal by Burial or Recycling

A6.4.1. All requests for disposal via land burial will be in writing to the Air Force Radioactive and Mixed Waste Office (AFIERA/SDRH (AFRMWO)). Requests for recycling will be made in writing to 88 ABW/EMB. Written requests shall include the following information:

A6.4.1.1. National Stock Number or part number and manufacturer's name or code of the radioactive source, if applicable.

A6.4.1.2. Nomenclature (e.g., Lensatic compass, tube assembly, test sample, etc.)

A6.4.1.3. Quantity of each item or amount of waste in terms of cubic feet.

A6.4.1.4. Radionuclide(s).

A6.4.1.5. Physical Form (e.g., solid, liquid, gas) to include any known hazardous waste constituents.

A6.4.1.6. Chemical form.

A6.4.1.7. Activity, estimated activity, per item/container and total in millicuries and in becquerels.

A6.4.1.8. Radiation exposure rate in millirem per hour (millisievert per hour) at 4 inches from surface of unpackaged item (for items only).

A6.4.2. Overseas installations are allowed to dispose of waste in their host country to the extent that such disposal is in compliance with existing host country regulations and agreements and has been approved by the cognizant host nation authority and AFMOA/SGOR.

A6.4.3. Electron tubes and spark gaps containing radioactive material can be disposed of as normal waste providing the following conditions are satisfied:

A6.4.3.1. Store electron tubes or spark gaps in a way that will prevent breakage. Each tube or spark gap contains less than the quantities of radioactive materials listed in 10 CFR Part 30.15 (do not accumulate exempt quantities) or does not contain more than the exempt quantity of naturally occurring or accelerator produced (NARM) materials specified in Attachment 2 and,

A6.4.3.2. The levels of radiation from each electron tube or spark gap do not exceed 1 milliroentgen per hour on contact when measured with a suitable radiation detection instrument such as an ADM-300 with external or internal GM probe, SM-400, or other suitable device capable of measuring external radiation exposure rates from gamma/x-ray radiation, and,

A6.4.3.3. Such disposal is allowed by the host state or country.

Attachment 7

REPORTING CRITERIA

A7.1. Radioactive Materials Incident and Accident Reports under this Instruction have been assigned Report Control Symbol RCS:HAF-SG(AR)9466. This report is designated emergency status code C-1. Continue reporting during emergency conditions, priority precedence. Submit data requirements assigned this category as prescribed or by any means to ensure arrival on the established due dates. Continue reporting during MINIMIZE. **Report Immediately (not later than three hours after discovery) to RIC Secretariat at Beeper no. 888-425-3861, or the Duty 202-767-4313; DSN 297-4313, or the Bolling AFB Command Post 202-767-4011; DSN 297-4011:**

- A7.1.1. Loss of control of radioactive material that presents a hazard to life or health.
- A7.1.2. Uncontrolled nuclear reactor criticality resulting in damage to the reactor core or release of fission products from the reactor core to the atmosphere or surrounding environment.
- A7.1.3. Accidental rupture of a radioisotope power system containment capsule or a reactor fuel element.
- A7.1.4. Any event, such as fire, explosion, or toxic gas release, involving radioactive material that prevents taking the immediate protective actions needed to avoid exposures to radiation or radioactive material, or to avoid releases of licensed or permitted material, above regulatory limits.
- A7.1.5. Any event that causes, or threatens to cause, an individual to receive dose equivalents at or above those listed in 10 CFR 20.2202, *Notification of Incidents*, paragraph (a)(1), or the release of radioactive material as described in 10 CFR Part 20.2202(a)(2). This includes receiving any package of radioactive material that exceeds limits specified by 10 CFR Part 20.1906, *Procedures for Receiving and Opening Packages*, paragraph (d).
- A7.1.6. Any spill or unplanned release of radioactive material resulting in exposure to unprotected or inadequately protected individuals that could exceed the limits of 10 CFR Part 20, Subpart C, paragraphs 1201, 1207 and 1208 and 10 CFR Part 20, Subpart D, paragraph 1301.
- A7.1.7. Radioactive materials or sources lost, stolen, or otherwise missing from their authorized location of storage or use.
- A7.1.8. Any unexpected event involving radioactive material or radiation exposure deemed serious enough to warrant the interest or action of non-Air Force officials or agencies. This includes:
 - A7.1.8.1. Events having domestic or international implications.
 - A7.1.8.2. Events that may cause inquiries by the public or press.
 - A7.1.8.3. Events requiring immediate notification to the NRC.
- A7.1.9. Any event involving a nuclear reactor, radioisotope power system or minor radioactive source (as defined in AFI 91-204), including any premature release of information, that may result in adverse public reaction.

A7.2. Report Within 12 Hours to RIC Secretariat at Beeper no. 888-425-3861, or the Duty 202-767-4313; DSN 297-4313, or the Bolling AFB Command Post 202-767-4011; DSN 297-4011:

A7.2.1. Any medical misadministration as defined in 10 CFR Part 35.2, *Definitions*. Also:

A7.2.1.1. The referring physician and then the patient must be informed of the misadministration within 24 hours. If you cannot contact the referring physician within 24 hours, inform the patient as soon as possible after consulting with the referring physician. **EXCEPTION:** Do not inform the patient if referring physicians personally state that they will inform the patient, or that, based on their medical judgment, telling the patient would cause harm.

A7.2.1.2. Give the patient any needed medical care. Do not delay care because of any delay in notification.

A7.2.1.3. Send a report to AFMOA/SGOR within 15 days. The report must include:

A7.2.1.3.1. The permittee's name, organization, installation, and other identification.

A7.2.1.3.2. The prescribing physician's name, a brief description of the event, why the event occurred, and the event's effect on the patient.

A7.2.1.3.3. What personnel have done to prevent recurrence and what remains to be done.

A7.2.1.3.4. Whether you told the patient or the patient's responsible relative or guardian and what you told them. If you withheld this information, explain why.

A7.2.1.4. Do not include the patient's name in the report or other information that could lead to identifying the patient.

A7.2.1.5. Patients that have been told of the misadministration must be given a copy of the 15-day report or a brief written description of the event and the consequences within 15 calendar days.

A7.3. Report Within 24 Hours to RIC Secretariat at Beeper no. 888-425-3861, or the Duty 202-767-4313; DSN 297-4313, or the Bolling AFB Command Post 202-767-4011; DSN 297-4011:

A7.3.1. Any event that causes, or threatens to cause, an individual to receive dose equivalents at, or above, those listed in 10 CFR Part 20.2202(b)(1) or the release of radioactive material as described in 10 CFR Part 20.2202(b)(2).

A7.3.2. Any unplanned contamination event that meets these three criteria:

A7.3.2.1. Requires restricting worker or public access to the contaminated area for more than 24 hours by imposing added radiological controls or by prohibiting entry to the area.

A7.3.2.2. Requires restricting access to the area for a reason other than to allow radioisotopes with a half-life of less than 24 hours to decay before decontamination.

A7.3.2.3. Involves a quantity of radioactive material greater than 5 times the lowest annual limit on intake specified in Appendix B of 10 CFR Part 20.1001-20.2401.

A7.3.3. Any disabling or failure of equipment, required to be operational when it fails and no redundant equipment is operational, if the equipment is required by regulation, license, or permit to:

A7.3.3.1. Prevent release of radioactive material.

A7.3.3.2. Prevent exposure to persons.

A7.3.3.3. Mitigate the consequences of an accident.

A7.3.4. Any event that requires unplanned medical treatment at a medical facility of individuals with radioactive contamination on their clothing or body.

A7.3.5. An unplanned fire or explosion that damages an amount of licensed or permitted material that exceeds 5 times the lowest annual limit on intake as specified in Appendix B of 10 CFR Part 20.1001-20.2401 or any device, container, or equipment containing such materials.

A7.3.6. Any of these events involving irradiator facilities:

A7.3.6.1. A source stuck in an unshielded position.

A7.3.6.2. Any fire or explosion in a radiation room.

A7.3.6.3. Damage to the source racks.

A7.3.6.4. Failure to cable or drive mechanisms used to move the source or source racks.

A7.3.6.5. Failure of access control systems.

A7.3.6.6. Radiation sources detected by the product exit monitor.

A7.3.6.7. Radioactive material contamination.

A7.3.6.8. Structural damage to the pool liner or walls.

A7.3.6.9. Abnormal water loss or leakage from the source storage pool.

A7.3.6.10. Pool water conductivity exceeding 100 microsiemens per centimeter.

A7.4. Report Within 1 Duty Day to RIC Secretariat:

A7.4.1. Discovery of any radioactive material that the permit or installation RSO cannot identify as an exempt quantity or an item not requiring a permit according to paragraph 3.3.2 of this instruction.

A7.4.2. Any defect in, or damage to, a radioactive source or device that presents a potential hazard to personnel or the environment. Defects include sealed sources with leak test results above 0.005 microcuries.

A7.5. Report Within 4 Duty Days to RIC Secretariat. Any defect or failure to comply as defined in 10 CFR Part 21.21, *Notification of Failure to Comply or Existence of a Defect and Its Evaluation*.

A7.6. Report Within 25 Calendar Days to RIC Secretariat. Any event that takes place during industrial radiography in which:

A7.6.1. The source assembly is unintentionally disconnected from the control cable.

A7.6.2. The source assembly does not retract and secure in the fully shielded position.

A7.6.3. Any part critical to the safe operation of the radiography device fails to work properly.

A7.6.4. When reporting these events, include all information listed in 10 CFR Part 34.30, *Reporting Requirements*, paragraphs (b)(1) through (7).

A7.7. Report Within 25 Calendar Days to RIC Secretariat:

A7.7.1. Any incident that involves:

A7.7.1.1. Doses to adult or minor workers that exceed the occupational dose limits in 10 CFR Part 20.1201, *Occupational Dose Limits for Adults* or 10 CFR Part 20.1207, *Occupational Dose Limits for Minors* respectively.

A7.7.1.2. Doses to a declared pregnant worker that exceed the limits for a fetus in 10 CFR Part 20.1208, *Dose to an Embryo/Fetus*.

A7.7.1.3. Doses to a member of the public that exceed the limits in 10 CFR Part 20.1301, *Dose Limits for Individual Members of the Public*.

A7.7.1.4. Doses to any person that exceeds any applicable limits in the permit.

A7.7.1.5. Levels of radiation or concentrations of radioactive material in:

A7.7.1.5.1. A restricted area, if levels exceed any applicable limits in the permit.

A7.7.1.5.2. An unrestricted area, if levels exceed 10 times any applicable limit in 10 CFR Part 20 or the permit, even if people are not exposed.

A7.7.1.6. Levels of radiation or releases of radioactive material that exceed the EPA environmental radiation standards in 40 CFR Part 190 or permit conditions related to those standards. **NOTE:** This applies only to permittees subject to 40 CFR Part 190.

A7.7.2. The report must include all information listed in 10 CFR Part 20.2203, *Reports of Exposures, Radiation Levels, and Concentrations of Radioactive Materials Exceeding the Limits*, paragraphs (b)(1) and (2).

A7.8. Report Within 25 Calendar Days to RIC Secretariat. Any event that causes a significant reduction in the effectiveness of any authorized shipping packaging during use. Give details of the defects and their safety significance. Explain how you repaired the defects and plan to prevent their recurrence.

A7.9. Report Within 30 Calendar Days to RIC Secretariat. Medical recordable events as defined in 10 CFR Part 35.2. Send a copy of the record required by 10 CFR 35.32, paragraph (c) to AFMOA/SGOR.

Attachment 8**RADIOACTIVE MATERIAL INCIDENT AND ACCIDENT (DEFECT AND NONCOMPLIANCE) CHECKLIST****A8.1. Personnel making a report must include:**

- A8.1.1. The organization and individual making the report and their telephone number, telefax number, and mailing address.
- A8.1.2. The organization responsible for the radioactive material or device and parent MAJCOM.
- A8.1.3. A description of the incident, defect, or noncompliance including:
 - A8.1.3.1. The date and time that the event occurred or when personnel discovered it.
 - A8.1.3.2. The specific location where the event occurred.
 - A8.1.3.3. A narrative of how the event occurred or your best estimate of how it occurred.
- A8.1.4. A description of hazard abatement actions taken or planned and an estimate of how long it will take to complete them.
- A8.1.5. Radioisotopes and an estimate of their quantities in grams, pounds, or curies. If the incident involves sealed sources, give the manufacturer, models, and serial numbers.
 - A8.1.5.1. Surfaces and dimensional areas of contaminated equipment, facilities, or ground, and results of radiation surveys for radiation levels in milliroentgen/hour and contamination in disintegrations per minute.
 - A8.1.5.2. Concentrations of radioactive material estimated or measured in air, water, and soil in millicuries per grams or liter or milligrams per gram or liter.
- A8.1.6. Names, grades, social security account numbers, and phone numbers of military and civilian personnel involved or exposed to radiation or radioactive material. Estimated levels of exposure or intake that people received, levels of radiation or concentrations that caused the exposure.
- A8.1.7. Instruments and methods used for personnel exposure estimates and surveys.
- A8.1.8. The name of the nearest community, town, or city and military installation.
 - A8.1.8.1. Assess the risk of exposure to any member of public.
 - A8.1.8.2. If the event occurred on installation, give the location of the nearest access by public or installation residents, the nearest housing, and the nearest workplaces.
- A8.1.9. The manufacturer, supplier, or construction firm of defective items or structures and any other locations and telephone numbers where personnel use like items.
- A8.1.10. The installation organizations and the titles of people responding to the incident.
- A8.1.11. Other Air Force, federal, state, or local organizations or representatives that you have notified.
- A8.1.12. The names of news organization asking for press releases and any press releases supplied.

A8.1.13. Applicable US Air Force Radioactive Material Permit or NRC License Number and Docket Number.

Attachment 9

RULES FOR USING RADIOIODINE

A9.1. To ensure compliance with 10 CFR Part 20, calculate or measure concentrations of radioiodine released to restricted and unrestricted areas to show compliance with NRC limits. If concentrations are calculated, personnel must use measured hood exhaust rates and release fractions published or given by the supplier for the product used.

A9.2. Use a laboratory fume hood or other effective capture exhaust system when working with volatile forms of radioiodine (liquid and capsule). Laboratory fume hood used for this purpose shall be directly vented to the environment via a dedicated line. In the event that a suitable laboratory fume hood is not available, it is acceptable to use a commercial filtered enclosure specifically designed for this purpose.

A9.3. Measure hood exhaust rates after installing new equipment to get a baseline and make sure that the system works properly and meets the design criteria.

A9.3.1. Verify hood exhaust rate measurements semiannually or as required by 10 CFR Part 35.

A9.3.2. If the hood system exhaust rate drops below 85 percent of the baseline, suspend use of radioiodine and fix the system.

A9.3.3. At exhaust rates between 85 and 99 percent of baseline, curtail use as needed to comply with NRC limits.

A9.4. As required by 10 CFR Part 20.1502, *Conditions Requiring Individual Monitoring of External and Internal Occupational Dose*, monitor exposure to radiation and radioactive materials as necessary to demonstrate compliance with the occupational dose limits of 10 CFR Part 20. Monitoring results must be recorded and reported in accordance with AFI 48-125, *USAF Personnel Dosimetry Program*.

Attachment 10

POSTING NOTICES TO WORKERS

A10.1. Post a supplemental notice to NRC Form 3 as required by 3.5.1. and 3.5.2. of this AFI and 10 CFR Part 21.6 which contains, at a minimum, the information given on the sample notice of this attachment.

SUPPLEMENTARY NOTICE TO NRC FORM 3

US Air Force Radioactive Material Permit No. _____¹ issued under the Air Force's Nuclear Regulatory Commission Master Materials License No. 42-23539-01AFP authorizes use of radioactive materials at this location. Contact

_____² to see a copy of the permit, amendments and supporting documents including Title 10 Code of Federal Regulations Parts 19, 20 and 21, AFI 40-201, and all operating procedures applicable to permitted activities. The Air Force Master Materials License, amendments, and supporting application is maintained by the USAF Radioisotope Committee Secretariat at Bolling Air Force Base, Washington, D.C. These documents are available for viewing at the USAF Radioisotope Committee Secretariat office. The USAF Radioisotope Committee Secretariat may be contacted by writing to AFMOA/SGOR, 110 Luke Ave, Room 405, Bolling AFB DC 20332-7050, DSN 297-4313, Commercial (703)767-4313.

SECTION 206 OF THE ENERGY REORGANIZATION ACT OF 1974

Notification to Commission of noncompliance

Any individual director, or responsible officer of a firm constructing, owning, operating, or supplying the components of any facility or activity which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954 as amended (42 U.S.C. 2011 et seq.), or pursuant to this chapter, who obtains information reasonably indicating that such facility or activity or basic components supplied to such facility or activity -

(1) fails to comply with the Atomic Energy Act of 1954, as amended, or any applicable rule, regulation, order, or license of the Commission relating to substantial safety hazards, or

(2) contains a defect which could create a substantial safety hazard, as defined by regulations which the Commission shall promulgate,

shall immediately notify the Commission of such failure to comply, of such defect, unless such person has actual knowledge that the Commission has been adequately informed of such defect or failure to comply.

Penalty for failure to notify

Any person who knowingly and consciously fails to provide the notice required by subsection (a) of this section shall be subject to a civil penalty in an amount equal to the amount provided by Section 234 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2282).

Posting of requirements

The requirements of this section shall be prominently posted on the premises of any facility licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.).

Inspection and enforcement

The Commission is authorized to conduct such reasonable inspections and other enforcement activities as needed to insure compliance with the provisions of this section.

SOURCE (Pub. L. 93-438, Title II, Sec. 206, Oct. 11, 1974, 88 Stat. 1246.)

¹ Enter the applicable permit number or numbers

² Enter the individual, organizational office symbol, address, and telephone extension

Attachment 11

SUMMARY OF RECORDS RETENTION REQUIREMENTS

A11.1. Refer to the applicable CFR to obtain technical details on records retention. This attachment is to serve only as a general guideline for requirements. All records must remain legible throughout the retention period. Records must include all pertinent information, such as stamps, initials and signatures (10 CFR Part 20.2110). After permit termination, permittee will forward the records to the AFMOA/SGOR for retention and archive.

Table A11.1. Record Retention Requirements.

| Required record | Record Maintenance | Notes | CFR |
|---|--|--|---------------------------|
| Technical Specifications | Until changed, permit amendment or renewal | | 10 CFR Part 20.1008(c) |
| Provisions of Radiation Protection Program | Until permit termination | | 10 CFR Part 20.2102(b) |
| Annual Audit, Reviews of Radiation Protection Program | 3 years after record made | | 10 CFR Part 20.2102(b) |
| Surveys and Calibrations | 3 years after record is made | | 10 CFR Part 20.2103(a) |
| External Dose Determination Surveys | Until permit termination | Must use rem, rad, Ci per 10 CFR Part 20.2101 | 10 CFR Part 20.2103 (b) 1 |
| Internal Dose Determination Surveys | Until permit termination | Must use rem, rad, Ci per 10 CFR Part 20.2101 | 10 CFR Part 20.2103 (b) 2 |
| Air Sampling, Surveys and Bioassay | Until permit termination | For respiratory equipment | 10 CFR Part 20.2103 (b) 3 |
| Effluent Dose Measurements and Calculations | Until permit termination | | 10 CFR Part 20.2103 (b) 4 |
| NRC Form 4 | Until permit termination | Dose estimate of prior occupational exposure | 10 CFR Part 20.2104 (f) |
| Planned Special Exposures | Until permit termination | | 10 CFR Part 20.2105 (b) |
| Dosimetry Records | Until permit termination | Includes DDE, SDE, LDE, embryo fetus and pregnancy declaration | 10 CFR Part 20.2106 |
| Demonstration of Dose Limits to Public | Until permit termination | | 10 CFR Part 20.2107 |
| Disposal of Permitted Material | Until permit termination | | 10 CFR Part 20.2108 |
| NRC Form 3 | Until 30 days after decommissioning | Must remain posted | 10 CFR Part 30.7 (e) 2 |

| Required record | Record Maintenance | Notes | CFR |
|---|--|--|-------------------------------|
| Decommissioning Records | Until site released for unrestricted use | Can transfer to new permit. Include Records of spills, as built drawings, restricted areas, cost estimates | 10 CFR Part 30.35 (g) |
| RAM Transferee Permit | Prior to transfer of RAM | No specific retention after transfer given, possibly 3 yrs, see 10 CFR Part 30.51 | 10 CFR Part 30.41 (d) 1 |
| Receipt of RAM | As long as material possessed, and 3 years after transfer or disposal made | | 10 CFR Part 30.51.(a) 1 |
| Transfer of RAM | 3 years after transfer | Unless otherwise specified | 10 CFR Part 30.51.(a) 2 |
| Disposal of RAM | Until permit termination | | 10 CFR Part 30.51.(a) 3.a |
| Not Specified | Until permit termination | If no specified retention | 10 CFR Part 30.51.(a) 3.b |
| Sealed Source Leak Checks and On/Off | 3 years after next leak check or till transfer or disposal | | 10 CFR Part 31.5 (b) 4.f.i |
| Sealed Source Testing and Maintenance | 3 years from event or till transfer or disposal | Removal, installation, shielding or containment | 10 CFR Part 31.5.b.4.f.iii |
| Records of Shipment of RAM Shipped Under 10 CFR Part 71 Rules | 3 years after shipment | Does not include RAM exemption under 10 CFR Part 71.10 (low level, such as less than type A) | 10 CFR Part 71.91 (a) |
| Packaging Qualified Under 10 CFR Part 71 Certification | 3 years after life of package | Packages under 10 CFR Part 71.85 | 10 CFR Part 71.91 (c) |
| Material Purchased for Packages Conforms | Life of Package | Packages under 10 CFR Part 71 | 10 CFR Part 71.115(b) |
| Transportation Quality Assurance Records for Shipping | 3 years past activity for which Transportation QA program written | Also 3 years after superseded | 10 CFR Part 71.135 |
| IP-1 Package Certification | 1 year after last shipment | | 49 CFR Part 173.411(c) |
| 7A Package Certification | 1 year after shipment | | 49 CFR Part 173.415(a) |

Table A11.2. Medical Requirements.

| Required record | Record Maintenance | Notes | CFR |
|---|-------------------------------------|---|-------------------------|
| Clients of Mobile Nuclear Medicine Service | 3 years after last service | Authorization by management | 10 CFR Part 35.29 (b) |
| Mobile Nuclear Medicine Surveys | 3 years | Survey of each client facility | 10 CFR Part 35.80 (f) |
| Minor Radiation Safety Program Changes | Until permit termination or renewal | | 10 CFR Part 35.31(b) |
| Dose Calibrator | 3 years unless otherwise directed | Includes check source, accuracy, linearity, geometry, repair | 10 CFR Part 35.50 (e) |
| Survey Instruments | 3 years | Record of calibration | 10 CFR Part 35.51 (d) |
| Brachytherapy Leak Checks | 5 years | | 10 CFR Part 35.59 (d) |
| Brachytherapy Quarterly Physical Inventory | 5 years | | 10 CFR Part 35.59 (g) |
| Brachytherapy Quarterly Ambient Dose Rate | 3 years | Storage area surveys | 10 CFR Part 35.59 (h) |
| Brachytherapy; Immediately After Implant Survey and Inventory | 3 years | | 10 CFR Part 35.406(d) |
| Brachytherapy Survey in Contiguous Areas | 3 years | | 10 CFR Part 35.415 (a)4 |
| Brachytherapy Specific Training | 3 years | Very specific Requirements, see also 10 CFR Part 35.310 (b) | 10 CFR Part 35.310 (b) |
| Contamination and Radiation Surveys | 3 years | Daily, weekly surveys for contam and rad. | 10 CFR Part 35.70 (h) |
| Decay in Storage | 3 years | Examine 10 CFR Part 30.51.(a) 3.a | 10 CFR Part 35.92 (b) |
| Calculations Used for Clearance of Areas Used for Aerosols or Gases | Duration of the use of area | Include assumptions, measurements and calcs. | 10 CFR Part 35.205 (d) |
| Hospitalized Radiopharmaceutical Therapy Patients | 3 years | Survey records of unrestricted areas around patient. | 10 CFR Part 35.315 (a)4 |
| Thyroid Burden of I-131 Preparers | Until permit termination | Not clear; Refers to 20.1206(a) but appears it meant 20.2105(b) | 10 CFR Part 35.315(a)8 |
| Release of Patient Survey | 3 years | | 10 CFR Part 35.404(b) |