

Administrative Change to CANNONAFBI 48-201, *Ionizing Radiation Protection and Management*

OPR: 27 SOAMDS/SGPB

All references to AFI 40-201, *Radioactive Materials Management* should be changed to AFMAN 40-201, *Radioactive Materials (RAM) Management* throughout the publication.  
4 Apr 2019

**BY ORDER OF THE COMMANDER  
CANNON AIR FORCE BASE (AFSOC)**

**CANNON AIR FORCE BASE  
INSTRUCTION 48-201**



**20 DECEMBER 2017  
Certified Current on 19 February 2019**

**Aerospace Medicine**

**IONIZING RADIATION PROTECTION  
AND MANAGEMENT**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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**RELEASABILITY:** There are no releasability restrictions on this publication.

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OPR: 27 SOAMDS/SGPB

Certified by: 27 SOMDG/CC  
(Col Christopher I. Patrick)

Pages: 8

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This supplement implements and extends the guidance of AFI 40-201, *Radioactive Materials Management*; AFI 48-148, *Ionizing Radiation Protection*; and AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry* establishing policies and procedures for Cannon AFB. It provides guidance for commanders and supervisors to safely manage radioactive material (RAM) and ionizing radiation in accordance with applicable laws, regulations, and directives. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afrims/afrims/afrims/rims.cfm>. Additionally, if the publication generates a report(s), alert readers in a statement and cite all applicable Reports Control Numbers in accordance with AFI 33-324. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, Recommendation for Change of Publication; route AF Form 847s from the field through the appropriate functional chain of command.

**1. ROLES AND RESPONSIBILITIES.**

1.1. **27th Special Operations Wing Commander** (27 SOW/CC) will enforce base compliance with this program to ensure the health and safety of all personnel on Cannon AFB.

1.1.1. The Wing Commander will appoint in writing an Installation Radiation Safety Officer (IRSO) to execute assigned duties in AFI 40-201, *Management of Radioactive Material*, AFI 48-148, *Ionizing Radiation Protection*, and AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*. The IRSO will possess the qualifications specified in AFI 48-148, Attachment 2. The IRSO and alternate IRSO are typically the Bioenvironmental Engineering (BE) Flight Commander and/or qualified BE personnel.

**1.2. All 27th Special Operations Squadron commanders and tenant unit commanders or equivalents will:**

1.2.1. Ensure unit personnel who receive, possess, distribute, use, transfer, or dispose of RAM observe the requirements of this instruction and federal, local, and USAF policies and regulations.

1.2.2. Appoint at least one Unit Radiation Safety Officer (URSO) in writing if a work center is identified by Bioenvironmental Engineering or the IRSO as having either non-exempt quantities of RAM, ionizing radiation producing equipment, or both. All work centers with RAM, to include exempt sources, must ensure those sources are secured when not in use and under constant surveillance when in use.

1.2.3. Ensure that the IRSO is contacted regarding the disposal of any exempt and non-exempt quantities of RAM. Special care must be taken for disposal due to the stringent requirements for low level radioactive waste disposal imposed by the Rocky Mountain Compact, to which New Mexico is party.

1.2.4. Ensure that units possessing non-exempt RAM, e.g., generally licensed RAM, provide the IRSO will access to inventory and leak-test the device as required.

**1.3. The IRSO will:**

1.3.1. Execute all duties specified in AFI 48-148, AFI 40-201, and AFMAN 48-125, and this supplement.

1.3.2. Act as central point of contact for all requests to use RAM or radiation-producing devices, including those by contractors.

1.3.3. Coordinate requests for radioactive recycling and disposal through the Air Force Radioactive, Recycle and Disposal (AFRRAD) located at Wright-Patterson Air Force Base with the 88th Air Base Wing.

1.3.4. Be the sole authority for contacting USAF Radioisotope Committee (RIC) or the Nuclear Regulatory Commission (NRC) regarding reportable events.

**1.4. 27th Special Operations Security Forces Squadron Commander (27 SOSFS/CC)** will, in addition to requirements specified in AFI 48-148 and AFI 40-201 ensure that non-exempt radioactive material entering the installation is accompanied by a current authorization from the IRSO in addition to appropriate Department of Transportation documentation and an NRC permit or Agreement State permit with a completed NRC Form 241. Deny entry if the required documentation is not available and immediately notify the IRSO directly or through the Command Post.

**1.5. 27th Special Operations Contracting Squadron Commander (27 SOCONS/CC)** will, in addition to requirements specified in AFI 48-148, AFI 40-201, and AFMAN 48-125:

1.5.1. Ensure that all contractors utilizing RAM and/or radiation producing equipment, within the scope of their work, contact the IRSO for written permission prior to bringing RAM and/or radiation producing equipment onto the installation as soon as practical but no later than 30 days prior to projected use.

1.5.2. Ensure that existing contracts include a requirement that all contractors holding Agreement State licenses apply for and obtain an approved NRC Form 241 before bringing radioactive materials onto the installation.

**1.6. 27th Special Operations Logistics Readiness Squadron Commander (27 SOLRS/CC)** will, in addition to requirements specified in AFI 48-148, AFI 40-201, and AFMAN 48-125:

1.6.1. Ensure that non-exempt radiological material or ionizing radiation producing devices are not purchased, transferred, shipped, disposed, or moved without IRSO approval.

1.6.2. Contact the IRSO as soon as practical prior to the movement of any non-exempt radiological material within the installation. Due to the infrequency of this operation, ad hoc procedures will be developed to ensure safe transport.

**1.7. 27th Special Operations Civil Engineering Squadron Commander (27 SOCES/CC)** will, in addition to requirements specified in AFI 48-148, AFI 40-201, and AFMAN 48-125:

1.7.1. Ensure that the IRSO is consulted as soon as practical in the design review process regarding any Military Construction (MILCON) designs or other projects that involve the use of RAM or radiation producing equipment or items on the installation.

1.7.2. Ensure that any suspected RAM waste sites are added into the Air Force Radioactive Waste Site Registry.

1.7.3. Assist the IRSO with characterizing mixed wastes if and when identified.

1.7.4. Consult with the IRSO during response operations involving nuclear or radiological materials.

**1.8. 27 SOAMDS/SGPB, Bioenvironmental Engineering (BE)** will:

1.8.1. Maintain the required equipment and technical proficiency to support the IRSO.

1.8.2. Perform work center visits and health risk assessments as required.

1.8.3. Execute a dosimetry program as described in AFMAN 48-125.

**1.9. 27 SOAMDS/SGPM, Public Health (PH)** will:

1.9.1. Provide As Low As Reasonably Achievable (ALARA) and URSO training to work centers.

1.9.2. Coordinate with the IRSO to ensure the training is current and meets applicable standards.

**1.10. 27 SOW/CP, Command Post** will:

1.10.1. Maintain contact information for the IRSO.

1.10.2. Notify the IRSO of any suspected radiological incidents or mishaps.

1.11. **URSOs** will, in addition to requirements specified in AFI 48-148, AFI 40-201, and AFMAN 48-125:

1.11.1. Ensure that they have training commensurate with their position. Contact the IRSO for training requirements.

1.11.2. Ensure that shop personnel are trained on ALARA.

1.11.3. Report any mishaps such as suspected exposure to radioactive materials or overexposure to ionizing radiation (i.e. x-ray operations) to the IRSO and their leadership immediately.

1.12. **Shop supervisors** will, in addition to requirements specified in AFI 48-148, AFI 40-201, and AFMAN 48-125:

1.12.1. Report any mishaps such as suspected exposure to radioactive materials or overexposure to ionizing radiation (i.e. x-ray operations) to their URSO and their leadership immediately.

1.12.2. Inform the IRSO and URSO **prior** to the operation and **immediately** upon receipt of any new radiation sources (i.e. RAM, Generally Licensed Devices) or radiation-producing devices (i.e. x-ray emitters), or changes to existing sources to ensure all radiation hazards in the workplace are evaluated.

1.13. **Work center employees designated as radiation workers** will, in addition to requirements specified in AFI 48-148, AFI 40-201, and AFMAN 48-125:

1.13.1. Review ALARA training annually.

1.13.2. Report any suspected exposure to radioactive materials or overexposure to ionizing radiation (i.e. x-ray operations) to their supervisor and work center leadership immediately.

1.13.3. Wear personnel dosimeters as assigned.

1.13.4. Notify the IRSO of any off-duty, non-Air Force radiation work (i.e., in other employment), and provide monitoring results for inclusion in the Master Radiation Exposure Registry.

STEWART A. HAMMONS, Col, USAF  
Commander

## ATTACHMENT 1

## GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

*References*

AFI 33-324, *Air Force Information Collections and Reports Management Program*, 6 Mar 2013

AFI 40-201, *Management of Radioactive Material*, 17 Sep 2014

AFI 48-148, *Ionizing Radiation Protection*, 20 Nov 2014

AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*, 04 Oct 2011

*Adopted Forms*

AF Form 847, *Recommendation for Change of Publication*

*Abbreviations and Acronyms*

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

**ALARA**—As Low As Reasonably Achievable

**BE** — Bioenvironmental Engineering

**CC**— Commander

**CP**—Command Post

**IRSO**—Installation Radiation Safety Officer

**NRC**—Nuclear Regulatory Commission

**PH**—Public Health

**RAM**—Radioactive Material

**RIC**—Radioisotope Committee

**SOAMDS** — Special Operations Aerospace Medicine Squadron

**SOCONS** — Special Operations Contracting Squadron

**SOCES** — Special Operations Civil Engineering Squadron

**SOLRS** — Special Operations Logistics Readiness Squadron

**SOSFS** — Special Operations Security Forces Squadron

**SOW**— Special Operations Wing

**URSO**—Unit Radiation Safety Officer

*Terms*

**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 SNM.

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

**Dosimeter**—A device that detects and measures accumulated ionizing radiation dose received by occupationally exposed individuals. The Dosimetry Program uses thermoluminescent dosimeters (TLDs). Examples of other types of dosimeters include film badges, pocket ionization chambers, Electronic Personnel Dosimeters (EPD) and CR-39 fast neutron detectors.

**Equipment and/or Items**—Instruments, manufactured articles or major end items constructed of or having RAM as a component part, often assigned a NSN, normally procured, stored and distributed through USAF and Department of Defense logistical supply systems. Items include but are not limited to such devices as chemical agent detectors/monitors (CADs/CAMs), Radiation Detection, Indication, and Computation (RADIAC) sets, lensatic/military compasses, dials and gauges. Items are not considered to include any loose RAM, radioactive contamination on other materials or in soil, or any material exhumed from a radioactive burial site.

**General License**—The NRC and/or an Agreement State issues a general license for individuals to acquire and use specific devices that have been manufactured and distributed according to the specifications approved by the NRC or the Agreement State. Individuals do not need to apply for this license; it is inherent in the distribution of the device. However, they must comply with the requirements for labeling, instructions for use, and proper storage or disposition of the device IAW 10 CFR Part 31.5.

**License**—Written authorization from the NRC or an Agreement State to acquire, receive, use, store or transfer byproduct, source, or Special Nuclear Material (SNM). 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 that 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).

**Mishap**—For purposes of this instruction, a mishap is defined in AFI 91-202, The U.S. Air Force Mishap Prevention Program. It is an event involving human acts of omission or commission involving a nuclear reactor, radioisotope power system, or RAM resulting in any of the following:

- (1) A loss of control of RAM 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 Title 10, CFR, Part 20, Standards for Protection Against Radiation.

(2) Any unexpected event involving RAM or radiation exposure that is serious enough to warrant the interest or action of officials or agencies outside the USAF. This category includes events: having domestic or international implications, those that may cause inquiries by the public or press, and those requiring immediate notification to the NRC under Title 10, Code of Federal Regulations, Part 20, Standards for Protection Against Radiation.

**Nuclear Regulatory Commission (NRC)**—An agency established by Title II of the Energy Reorganization Act of 1974 (Public Law 93-438) to regulate byproduct, source, and SNM 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.

**Permit**—Shortened term for USAF RAM Permit. See USAF RAM Permit.

**Radiation Safety Officer (RSO)**—An individual with specific education, military training, and professional experience in radiation protection practice appointed by a Permittee 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. 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 IRSO and PRSOs. Individuals appointed as the IRSO might not always have the specific technical experience and training needed to qualify as the PRSO. See Attachment 3 for RSO training requirements in the USAF.

**Radiation Worker**—An individual engaged in activities licensed or regulated by the NRC (or RIC) and controlled by a licensee (or Permittee) or regulated entity, but does not include the licensee (or Permittee) or regulated entity, IAW 10 CFR Part 19 Notices, Instructions, and Reports to Workers: Inspection and Investigations.

**Radioactive Item**—A single unit or article constructed of or having RAM, greater than exempt quantities, as a component part.

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

**USAF Radioisotope Committee (RIC)**—A committee established IAW requirements of the USAF Master Materials License to coordinate the administrative and regulatory aspects of

**permitting, acquiring, receiving, possessing, using, distributing, storing, transporting, transferring and disposing of all RAM in the USAF, except the material 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, and parts and fuel controlled under Section 91(a) or 91(b) of the AEA. It is primarily composed of stake—**holder representatives from the Office of the Secretary of the Air Force, Headquarters Air Force, and field operating agencies.

**Radioactive Waste**—Waste that contains RAM. Radioactive waste can be generally classed in one of four categories:

**Radioactive Waste: High-Level Radioactive Waste (HLRW)**—HLRW is spent nuclear fuel from nuclear power plants and waste material from reprocessing spent nuclear fuel.

**Radioactive Waste: Low-level Radioactive Waste (LLRW)**—LLRW is any radioactive waste that is not HLRW, uranium tailings, or transuranic waste.

**Radioactive Waste: Mixed Waste**—A waste that contains both hazardous waste as defined by the Resource Conservation and Recovery ACT (RCRA) and source, special nuclear or byproduct material subject to the Atomic Energy Act of 1954, as amended.

**Radioactive Waste: Transuranic Waste**—Waste material that contains transuranic elements with half-lives greater than 20 years and concentrations greater than 100 nanoCuries per gram. A transuranic is an element with an atomic number greater than 92 (e.g., plutonium, americium, and curium).

**Rocky Mountain Compact**—The Compact is an independent regulatory organization that is not an agency of any of its member states. The main purposes of the Compact are to provide for the disposal of low-level radioactive waste produced within the member states and to regulate the interstate commerce aspects of low-level radioactive waste. Low-level radioactive waste regulated by the Compact includes radioactive waste other than: high-level radioactive waste, transuranic waste, nuclear weapons waste, uranium and thorium tailings, and wastes from mining, milling, smelting, or similar processing of ores and mineral-bearing material primarily for minerals other than radium. See website for the Rocky Mountain Low-Level Radioactive Waste Board, the organization that administers the Compact at <http://www.rmlwb.us/about-rmlwb.htm> for more information and for rules related to the Compact.