BY ORDER OF THE
BASE JOINT BASE CHARLESTON
COMMANDER (AMC)

JOINT BASE CHARLESTON
INSTRUCTION

48-201

22 JANUARY 2024

Aerospace Medicine

IONIZING RADIATION PROTECTION PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: 628 OMRS/SGXB

Certified by: 628 OMRS/SGXB
(Maj Gina L. McComb)

Supersedes: JBCHARLESTONI 48-201, 17 March 2017

Pages: 14

This publication implements Department of the Air Force Manual (DAFMAN) 40-201, *Radioactive Materials Management*, and Air Force Manual (AFMAN) 48-148, *Ionizing Radiation Protection*. It provides guidance and procedures for implementing the ionizing radiation protection program at Joint Base Charleston (JBC). It applies to all military, civilian, contractor, and personnel supported by Joint Base Charleston who use radioactive materials or devices that generate radiation on Joint Base Charleston, except for personnel assigned to the Naval Health Clinic Charleston (NHCC), Nuclear Power Training Unit (NPTU), and the Navy Nuclear Power Training Command (NNPTC) schoolhouse. NHCC, NPTU, and NNPTC manage their own radiation programs and are governed by Navy regulations. This instruction does not supersede or replace the Joint Base Medical Memorandum of Agreement (JB MOA). Per the JB Medical MOA, 628th Medical Group (628 MDG) and NHCC will maintain responsibility for providing ionizing and non-ionizing radiation hazard assessments for their respective Active Duty (AD) and civilian populations. Each component will provide situational awareness to the other when any component's activities may impact the health and safety of the others' personnel. This instruction implements the "As Low As Reasonably Achievable" (ALARA) concept for control of ionizing radiation. It specifies local management procedures that are required for radiation exposures to be kept at a minimum, and to prevent loss of control of radioactive material (RAM). Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) AFI 33-322, *Records Management and Information Governance Program*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records

Disposition Schedule (RDS). Refer recommended changes and questions about this publication to the OPR listed above using the DAF 847, *Recommendation for Change of Publication*; route DAF 847 from the field through the appropriate chain of command. This publication may be supplemented at any level, but all supplements must be routed to the Office of Primary Responsibility (OPR) listed above for coordination prior to certification and approval. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force. This publication requires the collection and or maintenance of information protected by the Privacy Act (PA) of 1974. The Systems of Records Notice (SORN) for the Master Radiation Exposure Registry is F044-AF SG O. The authority to collect and or maintain the records prescribed in this publication is Department of Defense Instruction (DoDI) 6055.08, *Occupational Ionizing Radiation Protection Program*.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Major changes include formatting IAW AFI 33-322, and a description of local procedures for emergency radio bioassay monitoring.

Chapter 1

PROGRAM OVERVIEW

1.1. Overview. This instruction describes the Radiation Safety and As Low As Reasonably Achievable (ALARA) Programs for JBC. It requires control of Radioactive Active Material (RAM) and radiation-producing devices to safeguard the health of military and civilian populations, while permitting maximum benefits from their use. The effectiveness of these programs depends on consistent and conscientious safety efforts of the material/device users**.**

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Installation Commander shall:

2.1.1. Appoint, in writing, a qualified individual to be the Installation Radiation Safety Officer (IRSO), as appropriate.

2.1.2. Ensure that personnel in his or her command comply with applicable radiation protection standards.

2.1.3. Support the ALARA concept and ensure subordinate units follow the direction of this instruction and the IRSO.

2.2. Installation Radiation Safety Officer (IRSO):

2.2.1. Administer the Installation Radiation Safety Program by compiling annual RAM inventories, assisting units with conducting ALARA training, monitoring exposures to ionizing radiation, and overseeing acquisition and use of RAM.

2.2.2. Conduct annual surveillance IAW applicable radiation regulations in all areas on JBC where RAM or radiation producing devices are stored or used.

2.2.3. Conduct radioactive leak tests of Generally Licensed Devices (GLDs) items and other items requiring such tests, submit to lab for analysis, and supply the equipment owner with the results.

2.2.4. Identify units requiring ALARA training and assist such units with a training program.

2.2.5. Manage installation Optically Stimulated Luminescence (OSL) Program.

2.2.6. Serve as Air Force Radioisotope Committee (RIC) and Nuclear Regulatory Commission (NRC) inspectors' point of contact.

2.2.7. Provide consultation and advice on health hazards associated with radiation and the effectiveness of control measures.

2.2.8. Semi-annually or annually (based on the below items) brief the installation Environmental Safety and Occupational Health Council (ESOHC) on radiation protection topics, including receipt of new material and status of base permits, as well as status of radiation protection programs for commanders with radioactive material.

2.2.8.1. GLD inventories – semiannually.

2.2.8.2. Utilization of RAM on the installation by non-USAF organizations and contractors – semiannually.

2.2.8.3. Review any necessary changes to RAM policies on the installation – annually.

2.2.8.4. Incidents/Accident investigations involving RAM – annually.

2.2.8.5. Status of corrective actions associated with deficiencies identified during external RAM inspections or the annual IRSO permit audits – semiannually.

2.2.9. Review construction projects and facility designs to ensure radiation safety.

2.2.10. Establish procedures to review and approve contractor use of RAM (such as permitted density instruments) prior to use on JBC. Requirements for contractor use of RAM approvals can be found in **paragraph 3.6** of this instruction.

2.2.11. Inform the responsible commander and supervisors when processes and/or procedures are not in compliance and recommends corrective action to maximize safety and compliance.

2.2.12. Assist units' compliance with applicable posting and notification requirements.

2.2.13. Investigate abnormal incidents or exposures involving RAM.

2.2.14. Assist units with development/updates of their respective Operating Instructions (OIs)/Technical Orders (TOs) as requested.

2.3. Unit Radiation Safety Officer (URSO) shall:

2.3.1. Provide initial and annual unit radiation safety training for all personnel in the unit and consult the IRSO for training assistance.

2.3.2. Ensure all individuals on the Air Force personnel dosimetry program receive and follow written guidelines on wear and storage of radiation dosimeters and maintain records documenting all radiation safety training received.

2.3.3. Assist the IRSO by gathering information for annual inventories of ionizing radiation sources (RAM and x-ray units).

2.3.4. Notify the IRSO when new emitters are expected/received and if an individual is potentially overexposed to radiation.

2.3.5. Contact the IRSO immediately when any radioactive item is lost, damaged or leaking.

2.3.6. Ensure unit specific operating instructions and regulations are current.

2.3.7. Ensure compliance with applicable posting and notification requirements.

2.3.8. Ensure a replacement URSO is identified and designated in writing by the unit commander before departing for permanent change of station (PCS), extended temporary duty (TDY) location (180 days or more) or separation.

2.4. Unit Commanders with General Licensed Devices (GLDs) and X-Ray producing equipment shall:

2.4.1. Appoint a URSO in writing. If no URSO is appointed in writing, The URSO duties will default to the Unit Safety Officer until written authorization is developed.

2.4.2. Ensure personnel in his or her command who receive, distribute, use, or dispose of RAM or work with radiation producing equipment (i.e., x-ray machines) comply with applicable protection standards to include annual ALARA training.

2.4.3. Coordinate with the IRSO when procuring, transporting and/or disposing RAM or x-ray devices within the unit.

2.4.4. Ensure radiation workers who believe they may be pregnant report to their respective Medical Treatment Facility (628 MDG and NHCC).

2.5. Contracting Squadron Commander shall:

2.5.1. Ensure contractors are informed of the requirement for local approval for the use of RAM on JBC.

2.5.2. Ensure notification requirements to the IRSO are included in local contracts awarded/issued if contractor use of RAM is required.

2.5.3. Ensure contractors using RAM have received approval from the IRSO to use the material on base and maintain that approval for entry onto the installation.

2.5.4. Give the IRSO the authority to conduct periodic checks of contractors using RAM on base.

2.5.5. Work with the IRSO to suspend contractor operations involving RAM believed to be unsafe.

2.5.6. Notify the IRSO when a contractor wishes to bring RAM on base.

Chapter 3

RADIOACTIVE MATERIAL PROCEDURES.

3.1. Requisition of Radioisotopes. An AF Radioactive Material Permit/General License is required by all AF units for the possession and use of special purpose, non-stock-listed and/or high intensity radioactive items. Delivery of such items cannot be accepted until a permit is issued by the RIC. The proposed using organization will contact the IRSO who will assist in preparation of the permit application IAW DAFMAN 40-201. The IRSO will act as the liaison between the proposed user and the RIC.

3.2. Reporting/Certification.

3.2.1. A condition for continuance or issuance of a RAM permit is that the permittee comply with all requirements contained in the RAM permit.

3.2.2. Any incident involving RAM other than those in nuclear weapons or nuclear weapons components will immediately be reported to the Command Post and IRSO. The IRSO will make any further required reporting as necessary. If there is any uncertainty about reporting the incident, it should be reported.

3.3. Shipping.

3.3.1. The organization shipping RAM shall contact the 437th Aerial Port Squadron (437 APS) and the IRSO for recommendations on packaging, labeling, and other shipping requirements at (843) 963-3225 or DSN 673-3225.

3.3.2. 437 APS will notify the IRSO within 24 hours of all RAM shipments originating from JBC.

3.3.3. 437 APS personnel will work with the IRSO to ensure the RAM packages are checked for leakage, proper shipment labeling, and shipping container adequacy prior to shipment.

3.3.4. Department of Energy (DoE) Shipments via port arrivals will be coordinated by the IRSO and DoE team leads. The DoE team members will conduct radioactive surveys on the intermodal containers and provide their results to the IRSO. If results are verified to be safe, the IRSO will approve JBC personnel are allowed to enter the cargo haul.

3.4. Receiving.

3.4.1. When 437 APS Special Handling receives an item containing RAM, they will contact the IRSO within 5 hours to monitor the package.

3.4.2. Properly packaged and labeled RAM, once surveyed, will be forwarded immediately to the using organization or storage area.

3.4.3. Unauthorized purchases or shipments of RAM by base organizations are prohibited.

3.5. Storage.

3.5.1. 437 APS Special Handling will ensure that radioactive packages are kept secured in their designated security area. Personnel will place placards around the area and ensure people entering the area are authorized. The security area should be always locked.

3.5.2. Shops that maintain low levels of radioactive sources (i.e., check sources, compasses etc.) should ensure their radiation material is kept in a secure location and tracked frequently.

3.5.3. **If material is lost or goes missing, the URSO should communicate this to the IRSO within 24 hours.**

3.6. Contractor Use of Radioactive Materials on Joint Base Charleston.

3.6.1. Non-AF organizations that bring RAM onto or conduct operations involving RAM on JBC require written approval from the installation commander or IRSO.

3.6.2. Contractors or other non-AF organizations who wish to use RAM containing items on base must submit the following information to the IRSO for review and approval at least 30 days prior to use on JBC:

3.6.2.1. The location of item use and brief description of the proposed activities.

3.6.2.2. Device information to include the manufacturer, model number, serial number, isotope, and isotope activity.

3.6.2.3. Copy of the current NRC or Agreement State license with current NRC Form 241, *Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters*.

3.6.2.4. Date range of the request to bring the device onto the installation. Any extensions of the time frame must be reapproved by the IRSO.

3.6.2.5. The name(s) of the individual(s) using the device and his/her device training documentation.

3.6.2.6. The most recent leak testing documentation of the device, if applicable.

3.6.2.7. Storage plan for the device when not in use.

3.6.2.8. Local responsible representative and RSO contact information.

3.6.2.9. The contract number for which the project is supporting.

3.6.2.10. Radiological health and safety procedures to be used.

3.6.3. In the case that a contractor request to bring RAM onto NPTU, the NPTU Radiation Health Officer will review and approve/disapprove these requests.

3.7. Radioactive Material Disposition and Recycling Procedures.

3.7.1. Transfer or disposal of radioactive items through the Defense Logistics Agency (DLA) Disposition Services is prohibited.

3.7.2. URSOs will contact the IRSO if the respective unit has unwanted RAM. The IRSO will make the determination as to whether unwanted RAM is classified as being recyclable or waste.

3.7.3. Units that have items containing RAM isotopes (e.g., Ni-63) that can be recycled shall submit a request to the IRSO who will then submit a formal request to have that item shipped to Wright-Patterson Air Force Base and await recycling instructions.

3.7.4. Units that have RAM that is classified as waste will keep the item until disposal instructions are received from the IRSO.

3.7.5. Once the disposal instructions are received, the owning organization, IRSO, Supply, and Transportation will coordinate to ensure proper packaging, labeling, manifest preparation, distribution of forms and supply turn-in documentation is complete. The RAM owner is responsible for funding/constructing the shipment.

3.8. Procedures for Using X-Ray Equipment.

3.8.1. Sections using x-ray equipment will notify the IRSO when new equipment is acquired or installed or when facility modifications are to be accomplished.

3.8.2. The IRSO will conduct annual radiation safety surveys where x-ray equipment is used.

3.8.3. Shop supervisors or URSOs will ensure personnel receive annual ionizing radiation safety training. The IRSO will assist with developing, conducting, and providing training to shop supervisors or assigned URSOs.

3.8.4. Shop supervisor/workers will immediately report to the IRSO all suspected overexposures.

3.8.5. Supervisor and radiation workers will assist the IRSO with investigations of abnormal exposures and incidents.

3.9. Department of Energy (DoE) Radioactive Material Movements.

3.9.1. IAW the JBC DoE Support Plan (SPLAN) 13-526V2, DoE team leads will coordinate radioactive shipments with JBC personnel and the IRSO.

3.9.2. The DoE will complete radiation surveys and South Carolina Department of Health Environmental Control and NRC will perform radiological inspections, as required. The IRSO and Port Service Officers are provided the results. Approval must be granted before train/truck is allowed to depart.

3.9.3. The IRSO will provide radiation safety awareness training, provide radiological equipment and monitoring devices where applicable in support of DoE.

3.9.4. DoE will assist the IRSO with radiation safety assessments and measurements prior to, during, and after movement.

3.9.5. Please reference JBC Instruction 24-204, *Department of Energy Movements,* and the JBC DoE SPLAN for all roles and responsibilities concerning DoE shipments.

Chapter 4

RADIATION SAFETY TRAINING.

4.1. ALARA Training. ALARA training will be provided to the workplace supervisors by the IRSO. The training will be given by the supervisor to workers prior to initial work with RAM or RAM emitters with refresher training given annually. The extent of training will be commensurate with potential radiological health hazards in the workplace. The IRSO will make the determination as to which workplaces require ALARA training.

4.2. Ionizing Radiation Safety Training. Training should address the topics, as applicable, IAW AFMAN 48-148, Chapter 3. Training should be documented on an AF Form 55, *Employee Safety and Health Record,* or an equivalent type tracking system.

Chapter 5

DOSIMETRY.

5.1. Optically Stimulated Luminescence (OSL) Program.

5.1.1. The AF OSL program will be managed by the IRSO.

5.1.2. The IRSO will determine which AF workplaces are required to be enrolled in the OSL Program.

5.1.3. The investigation action levels are 0.042 rem/month and/or 0.130 rem/quarter and/or 0.500 rem/yr for Total Effective Dose Equivalent to correspond with guidance in the Bioenvironmental Engineer's Guide to Ionizing Radiation (United States Air Force School of Aerospace Medicine (USAFSAM) Publication).

5.1.4. Pregnant radiation workers are to be monitored throughout their gestation period.

5.2. Internal Dosimetry Program.

5.2.1. People working with unsealed radioactive materials that have the potential to intake radioactive material exceeding 2% of their Annual Limit on Intake (ALI) should be monitored for internal deposition of radionuclides. The IRSO will determine who meets this criterion through evaluation of work processes and controls.

5.2.2. No occupational exposures exist on the Air Base which exceed 2% of the ALI. An occupational radiobioassay sampling plan is not required.

5.2.3. For emergencies involving RAM on JBC, if the equipment/asset which caused the radiological release is Navy-owned, then the Navy will take the lead on internal dosimetry sampling efforts for all personnel involved. This includes Air Force emergency responders.

5.2.3.1. Both the Navy Nuclear Power Training Command (NNPTC) and Nuclear Power Training Unit (NPTU) have the capability to conduct in vivo radiobioassay (direct measurements of radiations emitted from the individual). This is different from in vitro (indirect measurements) methods such as the analysis of excreta or other biological samples removed from the body.

5.2.3.2. Results from Navy radiobioassay analysis for Air Force personnel must be collected from the NHCC Radiation Health Officer by the IRSO and inputted into the Defense Occupational and Environmental Health Readiness System (DOEHRS) and the member's medical record for documentation.

5.2.3.3. Bioenvironmental Engineering (BE) will utilize their applicable emergency response checklist for emergency bioassay sampling and support the Navy with any requests for assistance in sampling, monitoring, and other related matters.

5.2.4. If the equipment/asset which caused the radiological release is not Navy-owned, BE will follow procedures outlined in their applicable emergency response checklist for emergency bioassay sampling which details a sampling plan that has been approved by USAFSAM.

MICHAEL A. FREEMAN, Colonel, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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

AFMAN 48-148, *Ionizing Radiation Protection,* 20 July 2020 *Bioenvironmental Engineer's Guiden to Ionizing Radiation* (United States Air Force School of Aerospace Medicine (USAFSAM) Publication)

DAFMAN 40-201, *Radioactive Materials (RAM) Management,* 29 March 2019

DoDI 6055.08, *Occupational Ionizing Radiation Protection Program*

JBCHARLESTON1 24-204, *Department of Energy Movements,* 7 February 2023

Prescribed Forms

None

Adopted Forms

DAF 847, *Recommendation for Change of Publication*

AF Form 55, *Employee Safety and Health Record*

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

Abbreviations and Acronyms

AD—Active Duty

AF—Air Force

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFRIMS—Air Force Records of Information Management System

ALARA—As Low As Reasonably Achievable

ALI—Annual Limit on Intake

APS—Aerial Port Squadron

BE—Bioenvironmental Engineering

DAFI—Department of Air Force Instruction

DAFMAN—Department of the Air Force Manual

DoE—Department of Energy

DLA—Defense Logistics Agency

DOEHRS—Defense Occupational and Environmental Health System

ESOHC—Environmental Safety and Occupational Health Council

GLD—Generally Licensed Devices

IAW—In Accordance With

IRSO—Installation Radiation Safety Officer

JB MOA—Joint Base Medical Memorandum of Agreement

MDG—Medical Group

NHCC—Navy Health Clinic Charleston

NNPTC—Navy Nuclear Power Training Command

NPTU—Nuclear Power Training Unit

NRC—Nuclear Regulatory Commission

OI—Operating Instruction

OPR—Office of Primary Responsibility

PCS—Permanent Change of Station

RAM—Radioactive Material

RDS—Records Disposition Schedule

RIC—Radioisotope Committee

TDY—Temporary Duty

OSL—Optically Stimulated Luminescence

TO—Technical Order

URSO—Unit Radiation Safety Officer

USAF—United States Air Force

USAFSAM—United States Air Force School of Aerospace Medicine