BY ORDER OF THE COMMANDER
LUKE AIR FORCE BASE

LUKE AIR FORCE BASE
INSTRUCTION 40-201

11 MARCH 2024

Medical Command

RADIATION PROTECTION PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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RELEASABILITY: There are no releasability restrictions on this publication.

OPR: 56 OMRS/SGXB

Certified by: 56 MDG/CC
(Col Leilani Riley)

Supersedes: AFI 40-201_LUKEAFBSUP, 3 March 2020

Pages: 29

This instruction implements and extends local procedures in accordance with Air Force Policy Directive (AFPD) 40-2, *Radioactive Materials (Non-Nuclear Weapons)*, and Department of the Air Force Manual (DAFMAN) 40-201, *Radioactive Materials (RAM) Managemen*t. It also references Department of the Air Force Manual (DAFMAN) 40-201, *Radioactive Materials (RAM) Management*; Air Force Instruction (AFI) 48-109, *Electromagnetic Field Radiation (EMFR) Occupational and Environmental Health Program*; AFI 48-139, *Laser and Optical Radiation Protection Program*; AFMAN 48-148, *Ionizing Radiation Protection*; DAFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*; and As Low As Reasonably Achievable (ALARA) concepts for exposures to ionizing and non-ionizing radiation at Luke Air Force Base (AFB). This instruction applies to all personnel, military and civilian, who bring radioactive materials (RAM) onto or use RAM on Luke Air Force Base (AFB). This publication applies to the U.S. Air Force Reserve units and members attached or assigned to Luke AFB. Refer recommended changes and questions about this publication to the OPR using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. The authorities to waive wing, unit, delta or garrison level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See DAFI 90-160, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. This publication may not be supplemented or further

implemented/extended. 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.

SUMMARY OF CHANGES

This publication has been revised and should be completely reviewed. Major changes include addition of references: DAFMAN 40-201, AFI 48-109, AFI 48-139, AFMAN 48-148, DAFMAN 48-125, and ALARA concepts for exposures to ionizing and non-ionizing radiation at Luke AFB. This instruction supersedes AFI 40-201_Luke AFB Supplement, *Managing Radioactive Materials in the US Air Force*, 3 March 2020.

Chapter 1

IONIZING RADIATION

1.1. Responsibilities.

1.1.1. The Commander, 56th Fighter Wing (56 FW/CC), Luke AFB is responsible to:

1.1.1.1. Appoint, in writing, qualified individuals to be the Installation Radiation Safety Officers (IRSO) IAW AFMAN 48-148, paragraph 2.10.2. for Luke AFB. The IRSOs will be from the 56th Medical Group Bioenvironmental Engineering Flight.

1.1.1.2. Ensure the installation radiation safety program is comprehensive, compliant with current requirements, and fully integrates the radiation safety programs of units, tenant units, and geographically separated units (GSUs) through the IRSO.

1.2. Installation Radiation Safety Officers (IRSO).

1.2.1. The IRSO is responsible to ensure the overall coordination of installation radiation safety activities; to provide direct support and information to 56 FW/CC on radiation health and safety issues and effectiveness of measures to control radiation hazards to comply with Federal, Department of Defense (DoD), and AF requirements (ref: DAFMAN 40-201, AFMAN 48-148, AFI 48-109, AFI 48-139, and DAFMAN 48-125); and to:

1.2.1.1. Establish and manage the overall installation radiation safety program IAW AFMAN 48-148, Chapter 4, for 56 FW/CC. The program must include periodic, but at least annual, reviews of procedures and practices, facility design and classification, training, exposure control, monitoring, and surveillance activities.

1.2.1.2. Publish an installation radiation safety supplement detailing local procedures for complying with applicable AF requirements and annually review it through the base publication process if changes are needed.

1.2.1.3. Establish and manage a personnel ionizing radiation dosimetry program for Luke AFB IAW DAFMAN 48-125.

1.2.1.4. Manage the radioactive waste program for Luke AFB organizations IAW DAFMAN 40-201, paragraph 4.2.1.

1.3. Commanders of supporting organizations which use radioactive material or radiation producing devices will:

1.3.1. Designate, in writing, a Unit Radiation Safety Officer (URSO) when in possession of RAM or radiation sources. Additionally, designate in writing, a Permit Radiation Safety Officer (PRSO) when in possession of licensed radioactive materials under USAF radioactive material permit or radiation producing devices. Copies of current organizational or unit appointment letters will be provided to the IRSO. Units that possess only equipment with magnesium-thorium components, not covered by permits, and exempted check sources generally do not require URSOs. Consult with the IRSO for guidance on PRSO requirements.

1.3.2. Ensure URSOs and PRSOs implement process controls as required by the IRSO.

1.3.3. Prohibit unauthorized use of radioactive materials and radiation producing devices. Approval to use or operate such devices must be obtained from the IRSO.

1.3.4. Ensure the reporting of accidents or incidents involving radioactive material or radiation producing devices to the IRSO within 24 hours and meet requirements of; DAFI 91-204, *Safety Investigation and Reports*, AFI 41-106, *Medical Readiness Program Management*, DAFMAN 40-201, and applicable emergency management plans.

1.4. URSO and PRSO are responsible to:

1.4.1. Establish and manage the organization or unit level radiation safety program IAW AFMAN 48-148, paragraph 4.1.2.1.

1.4.2. Notify and coordinate with the IRSO before making changes regarding radioactive materials or radiation sources (e.g., the amount or types of radioactive materials; new or altered radiation sources; special operations; or construction of new facilities). The IRSO shall also be notified prior to any change in facilities affecting source or device security requirements, increased potential for personnel exposures, the location of radioactive materials or radiation sources, or the potential for release of radioactive materials.

1.4.3. Request the IRSO for review and approval of any new or revised operating instructions, standard operating procedures, or unit instructions impacting the radiation safety program prior to implementation.

1.4.4. Immediately notify the IRSO:

1.4.4.1. Of all accidents or incidents involving radiation. Aid the IRSO in evaluating and investigating such exposures.

1.4.4.2. Any event that results in an unplanned radiation exposure to any individual.

1.4.4.3. Any defect or damage to radioactive materials or radiation producing devices.

1.4.4.4. Any deviation or failure to comply with the provisions of a radioactive material permit, governing regulation, technical order, or this instruction.

1.4.4.5. The discovery of unidentifiable radioactive material.

1.4.4.6. Prior to disposal, or recycling of any radioactive material, and radiation-producing equipment. The IRSO will coordinate the transport of these items.

1.4.5. Notify IRSO no less than 30 days prior to ordering devices or equipment that contain or are expected to contain radioactive material for approval and evaluation.

1.5. Use of Radioactive Materials or Radiation-Producing Devices by Contractors on Luke AFB.

1.5.1. 56th Contracting Squadron (56 CONS) shall ensure:

1.5.1.1. All statements of work and/or contract solicitations include statements requiring that radioactive materials and/or ionizing radiation-producing devices be identified to the IRSO prior to entry onto Luke AFB. All contracts in the terms and conditions the IRSO determined must be in the contract in order to be in compliance with all applicable statutes, regulations, and instructions for managing radioactive materials and radiation-producing devices.

1.5.1.2. Contractors bringing radiation-producing devices and/or radioactive materials on to Luke AFB will send a notification to the IRSO at least 30 calendar days before bringing

these materials or devices onto the installation. The notification must be in writing and must include DAFMAN 40-201, paragraph 3.4.4.2 (for radiation-producing devices, radioactive material license equivalent document will be required). Depending on the nature of the work, a safety plan or equivalent may be required. Contact the IRSO to determine if a work safety plan is required for review.

1.5.1.3. Contractors who plan to store radioactive material on Luke AFB provide storage and security information to the IRSO.

1.5.1.4. Contractors will allow the IRSO to make periodic checks to ensure that the contractor personnel follow radiation safety practices to prevent exposures to Air Force personnel and avoid contamination of government property. In addition, the IRSO has authority to recommend suspension of contractor operations believed to be unsafe. This action must be coordinated with the contracting officer/designated representative.

1.5.1.5. Contractors are responsible for immediately contacting the contracting officer and the IRSO whenever radioactive material in their control may impact AF operations, personnel, or facilities.

1.5.1.6. Monitoring and review of contracts on projects in which contractor(s) requires the use of devices that contain radioactive materials (e.g., soil density gauges), radiography cameras, or use of radiation-producing devices (e.g., portable x- ray machines).

1.5.1.7. The IRSO reviews scope of work to assess radiation protection requirements prior to contractor(s) bringing radioactive material containing devices or radiation-producing devices onto Luke AFB.

1.5.2. Control (by approving or disapproving) Contractors or Subcontractors requesting the use of RAM within the installation for construction projects. IRSO will determine approval via information collected from paragraphs **1.5.3.1** through **1.5.3.10** below. Approved RAM users will receive a temporary Luke RAM Permit (see **Attachment 2**).

1.5.3. Contracting Officers (the following apply to any contract awarded that will be performed on Luke AFB, Fort Tuthill AFB, or Gila Bend Air Force Auxiliary Field that permits the use of RAM in the performance of the contract):

1.5.3.1. The Servicing Contracting Office will ensure that all contractors are aware of this requirement. The Servicing Contracting Office will also place a standardized statement in bid solicitations requiring bidders to identify any planned use (including subcontractor use) of RAM or devices. The contractor must submit the following documentation to the IRSO for review, preferably as attachments to a cover letter on company letterhead:

1.5.3.2. Copy of the Nuclear Regulatory Commission (NRC) License or Agreement State License, along with any amendments, covering the radioactive material to be used. The license must be current as shown by the expiration date. Of note, the IRSO is specifically prohibited from approving use for more than 180 calendar days per calendar year if the contractor submits an agreement state license.

1.5.3.3. Copy of the users' qualifications and proof of radiation safety training.

1.5.3.4. A brief description of the proposed activities, including a copy of the section of the Air Force contract describing the work to be done at the base and the inclusive dates of the work.

1.5.3.5. Statement of storage and security requirements or other particular needs of the contractor, if applicable.

1.5.3.6. Copies of the last two leak checks if required by license, permit, or State Agreement.

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

1.5.3.8. Ensures that under no circumstances will an unlicensed radioactive source/device be used on Luke AFB. Any questions on contractor responsibility regarding this issue should be directed to the IRSO prior to the contractor starting any work.

1.5.3.9. Ensures immediate notification to IRSO concerning any incident or accident, loss, theft, or damage to the device or any alleged radiation exposures. Outside normal duty hours, contact the IRSO through the 56 FW Command Post (623-856-5600). During duty hours the IRSO is available at 623-856-7521.

1.5.3.10. Ensures that procurement procedures prohibit the acquisition of radio luminous signs (per HQ AETC/SG Memorandum "Accountability and Registration of Radio Luminous Exit Signs," dated 26 Apr 04).

1.6. 56th Logistics Readiness Squadron Traffic Management Office (56 LRS TMO).

1.6.1. Coordinates all shipments of radioactive material to or from Luke AFB.

1.6.2. Notifies the IRSO of any radioactive material or devices being received or shipped.

1.6.3. Allows Bioenvironmental Engineering to survey radioactive materials and devices prior to packaging shipments and prior to opening received packages. The IRSO is not a certified hazardous material shipper and cannot sign off on any paperwork in regard to the shipment for transportation.

1.6.4. Monitors shipment of radioactive materials covered under an existing USAF RIC Permit in strict accordance with the permit requirements.

1.7. 56th Civil Engineer Squadron (56 CES).

1.7.1. Provide immediate notification to the IRSO of damage (e.g., fire, natural disaster, etc.) to buildings or waste sites where RAM is located, this includes any incident or event where these structures are potentially at risk because of proximity.

1.7.2. Coordinate with the IRSO to ensure installation emergency response plans include procedures for the theft, loss, sabotage, or release of RAM.

1.7.3. In coordination with the IRSO and Installation Commander, notify the State Emergency Response Commission and the Local Emergency Planning Committee when RAM incidents occur requiring execution of Emergency Planning and Community-Right-To-Know-Act (EPCRA) protocols.

1.8. 56th Security Forces Squadron (56 SFS).

1.8.1. Provide immediate notification through Command Post (CP) during both duty and non-duty hours. CP will notify the IRSO of suspected, attempted, or actual theft or sabotage of

RAM found by Security Forces, to include any situation where the potential for collateral damage exists due to threats in proximity to RAM.

1.8.2. Ensure anyone transporting NRC licensed or permitted RAM onto the installation has a signed authorization from the IRSO prior to being granted access to the installation.

1.8.3. Provide immediate notification through CP during both duty and non-duty hours. CP will notify the IRSO of any attempted unauthorized transport of RAM onto the installation found by Security Forces, excluding 91(b) material.

1.9. Supervisors.

1.9.1. The supervisor of each operation or shop using, handling, or storing radiation producing equipment or materials:

1.9.1.1. Coordinates with the IRSO before starting any project including procurement, new use, storage, and/or disposal of radiation sources or any changes in working conditions or activities which would affect the Radiation Safety Program.

1.9.1.2. Submits written request to IRSO for consultation on radioactive waste. Provides information required by Technical Order 00-110N-3. Obtains written direction before transferring waste from the using facility.

1.9.1.3. Ensures personnel perform their duties in a way that ALARA principles are followed.

1.9.1.4. Coordinates with the Unit RSO for the training of employees who may be occupationally exposed to ionizing radiation.

1.10. As Low as Reasonably Achievable (ALARA).

1.10.1. The ALARA concept was developed in response to scientific evidence which suggests that no level of radiation exposure is entirely risk-free. It is a policy which states that although there are acceptable, conservative levels of radiation exposure specified by federal regulations which offer a low risk of adverse health effects compared to the other hazards of life and occupation, it is prudent to make every effort to reduce exposures to the lowest levels reasonably achievable, thereby lowering the health risk associated with that exposure. In fact, individual and cumulative radiation exposures must be maintained as close to zero as possible given the type of activities involved, the state of technology, the risk to the individuals exposed, and the benefit to society from the activity being accomplished.

1.10.2. ALARA Commitment. The guidance contained in this instruction provides the basis for conducting an effective ALARA program. The radiation safety program at Luke AFB is managed by the IRSO through this publication for the 56 FW/CC. Luke AFB is committed to the concept of ALARA.

1.11. Permits and Authorization for the Possession and Use of Radioactive Materials and Radiation Producing Devices.

1.11.1. The IRSO approves the possession and use of radioactive materials or radiation producing devices. Operations conducted under the conditions of a permit must be documented to ensure compliance with the installation ALARA program.

1.11.2. Organizations located at Luke AFB and contractors performing work at Luke AFB must possess a; U.S. NRC or Agreement State License, equivalent local license, or an AF or Navy radioactive material permit, or radioactive material/radiation producing device authorization provided by the IRSO in order to possess and/or use radioactive material or radiation-producing devices.

1.11.2.1. Radioactive materials include any item that emits radiation without external power. Examples are byproduct, source, and special nuclear material as defined in; 10 CFR 30, Rules of general applicability to domestic licensing of byproduct material, 10 CFR 40, Domestic licensing of source material, and 10 CFR 70, Domestic licensing of special nuclear material. Products distributed as exempt by a manufacturer licensed to distribute to exempt persons do not require a permit, if used for their intended purpose.

1.11.2.2. A radiation-producing device is any piece of equipment that emits ionizing radiation, regardless of intent, when energized by an external power source. Examples include medical and industrial x-ray machines, x-ray diffraction and fluorescence units, scanning and transmission electron microscopes, and particle accelerators. In general, any device that accelerates electrons or other atomic particles with a potential difference of 10,000 volts or greater and produces x-radiation, either intentionally or unintentionally, may require an authorization from the IRSO. Some exceptions are television monitors, cathode ray tubes and video display terminals which are manufactured under the strict requirements of 21 CFR 1020.10, Television receivers.

1.11.2.3. All NRC specifically licensed RAM, NRC generally licensed RAM, and RIC permitted RAM (and any other type of RAM specified by written RICS directive) possessed, used, or stored by Luke AFB and tenant AF units must be correctly listed in a current and accurate semi-annual inventory in the USAF Radioactive Material Management Information System (RAMMIS).

1.12. Generally Licensed Devices (GLDs).

1.12.1. NRC or Agreement State issues a general license to acquire, receive, use, store, or transfer certain devices that contain radioactive material, which have been manufactured, tested, and labeled by the manufacturer in accordance with the specifications contained in a specific license issued to the manufacturer by NRC. These devices are labeled as being generally licensed.

1.12.1.1. GLDs used within USAF should be purchased using Defense Federal Acquisition Regulations, assigned an NSN and registered in the Federal Logistics Information System, and Hazardous Material Information Resource System. All GLDs shall be registered in the USAF logistics system and identified as radioactive and inventoried in RAMMIS.

1.12.1.2. All USAF units or organizations at Luke AFB who possess GLDs will:

1.12.1.2.1. Comply with NRC's Sealed Source and Device Registry (SSDR) requirements for each specific GLD device type and requirements in DAFMAN 40-201, section 3.10.3. through 3.10.6.

1.12.1.2.2. Appoint a responsible individual as GLD monitor to ensure that the requirements of the SSDR are met and that the RAMMIS inventory is current. The

appointment memorandum shall be forwarded to the IRSO. The appointed individual will receive an initial briefing on proper management of GLDs from the IRSO.

1.13. Training.

1.13.1. IAW AFMAN 48-148, paragraph 4.3., all personnel (military, civilians, and in-house contractors) who have the potential to be occupationally exposed to above 1 mSv (100 mrem) in a year shall receive initial and annual training that is appropriate in breadth and depth to the radiation hazards present in the workplace, or when the IRSO determines the training is required:

1.13.2. Before the individual is permitted to assume duties with or in the vicinity of radiation sources.

1.13.3. Annually during a refresher training course.

1.13.4. When there is a significant change in duties or radiation safety requirements.

1.13.5. Training shall be provided by:

1.13.5.1. The URSO or PRSO with the assistance of the IRSO.

1.13.5.2. The URSO shall provide the IRSO documentation showing their personnel have completed radiation safety training. This may be accomplished by forwarding a training log or electronic printout showing completion dates for the specific course.

1.13.6. Training should include but not be limited to the topics described in AFMAN 48-148, table 3.1. The topics of training for individuals who have the potential to be occupationally exposed less than 100 mrem in a year will be determined by the IRSO based on breadth and depth to the radiation hazards present in their duty/workplace.

1.13.7. Record of all radiation safety training shall be documented and maintained IAW AFMAN 48-148, paragraph 4.3.1.3. and AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation and 91(B) Radioactive Material Safety Program,* as applicable.

Chapter 2

PERSONNEL IONIZING RADIATION DOSIMETRY

2.1. Ionizing Radiation Dosimetry Program.

2.1.1. Radiation Workers. At Luke AFB, individuals who routinely work with or in the vicinity of sources of ionizing radiation may be designated as radiation workers by the IRSO after an evaluation of the potential hazards. IAW the monitoring criteria of AFMAN 48-148 and DAFMAN 48-125, radiation workers are issued Optically Stimulated Luminescence Dosimeters (OSL) which are exchanged either monthly or quarterly as determined by the IRSO. Under certain circumstances, radiation workers may also be issued digital dosimeters, known as Electronic Personnel Dosimeters (EPDs), in addition to standard radiation dosimeters to permit immediate evaluation of a potentially hazardous radiation environment.

2.2. The supervisor, or designated radiation dosimeter monitor, of a newly assigned worker has the responsibility to request radiation monitoring for that individual.

2.2.1. Monitoring shall be required if the worker shall be located in an area designated by the IRSO as a potential radiation hazard area or if, because of the assigned duties, the individual is classified as a radiation worker requiring dosimetry.

2.2.1.1. Ensure the OSL badge, when not worn during work, is stored at the storage rack. Provide a OSL storage rack/board capable of storing OSLs for all department ionizing radiation sources. Storage of OSL badge in areas other than the IRSO workplace designated rack (e.g., desk drawers) will not be permitted.

2.2.1.2. Brief all personnel on the requirements of the dosimetry program and ensure personnel comply with the requirements of wearing the badge and returning the badge to the storage rack when departing the immediate work area.

2.2.1.3. Ensure all OSLs are present and accounted for during the IRSO monthly/quarterly exchange. Report instances where OSLs cannot be located to the section superintendent.

2.2.1.4. Notify IRSO by telephone or email of personnel departing Luke AFB for permanent change of station (PCS), separation, or retirement so clearing procedures can be accomplished.

2.2.1.5. Notify IRSO of any OSL wearer being employed in a second job that involves ionizing radiation.

2.2.1.6. Notify IRSO of any OSL wearer on temporary duty (TDY) that may be exposed to ionizing radiation and will require the OSL.

2.3. Radiation Safety Briefing.

2.3.1. Each individual to be monitored shall be provided with a radiation safety briefing to include an explanation concerning proper wearing and storage of the dosimeter and the right to review the dosimetry results each month or quarter.

2.4. Annual Report of Occupational Exposure Dosimetry Results.

2.4.1. The US Air Force School of Aerospace Medicine, Radiation Dosimetry Branch (USAFSAM/OEA) provides the IRSO, via the Radiation Dosimetry Web, with USAFSAM

Form 1527-1, *Annual Occupational Exposure History to Ionizing Radiation*, to each individual entered on the dosimetry program and forwards to Outpatient Records for posting in the medical records after review/signature of individual monitored.

2.4.2. When the forms are received, the IRSO will review and deliver them with a cover letter accompanying instructions and comments if any to the workplace radiation dosimeter monitors within 30 days of receipt.

2.4.3. The forms must be reviewed by each monitored individual and signed. Then, the signed forms will be returned to the IRSO. The IRSO ensures that the signed forms will be filed in the individual's medical records IAW DAFMAN 48-125, paragraph 11.5.2. The IRSO maintains a record copy (signed Form 1527-1) in each workplace dosimetry electronic file for 5 years.

2.5. Cumulative History of Occupational Exposure.

2.5.1. USAFSAM Form 1527-2s, *Cumulative Report of Individual Exposure to Ionizing Radiation*, (equivalent to NRC Form 4, Cumulative Occupational Dose History), which summarizes an individual's cumulative dosimetry history results will be provided upon written request of the individual, the IRSO, or other authorized organizations and individuals. All requests other than those made for official Air Force use must have a release signed by the individual for whom the report is requested.

2.6. Shop Supervisor or OSL Area Monitor.

2.6.1. The shop supervisor or OSL area monitor shall indicate the dosimeter storage location and describe the procedures for requesting a review of the dosimetry results. Storage locations will be approved by IRSO or IRSO designee.

2.7. Visitors to Any Restricted Areas.

2.7.1. Visitors to any restricted areas IAW AFMAN 48-148, paragraph 5.2.5. shall be accompanied by persons knowledgeable about the protection and safety measures in the area and must be provided adequate information and instruction before entering the area. Visitors entering a radiation area or that could incur a deep dose equivalent of greater than 10 mrem shall be provided appropriate personnel monitoring devices. The responsible supervisor shall contact the IRSO for coordination of issuing the monitoring devices to the visitor.

2.8. Use of EPD or Similar Device.

2.8.1. In addition to routinely issued radiation monitoring badges, some activities of a higher risk of a large exposure may also require the use of EPDs or similar device. Unlike OSLs, EPDs are designed to be evaluated immediately and provide an instant indication as to whether an exposure has occurred. For this reason, EPDs are normally issued to visitors likely to receive greater than 10 mrem to determine if an exposure has occurred before the visitor is lost to follow-up.

2.9. Investigation Levels.

2.9.1. In addition to federally imposed dose limits, the NRC has also recommended the adoption of investigation levels for radiation workers. These levels are not legal limits. They are values set at a percentage of the federally mandated limits to assist radiation safety program monitors to comply with the ALARA concept by anticipating potential difficulties and

initiating corrective actions. Therefore, investigations shall be accomplished in a timely manner by the IRSO for doses received by individuals in excess of the established ALARA levels. The investigation shall consider each such exposure in comparison with those of others performing similar tasks.

2.9.1.1. Locally Established Investigation Levels. Based on review of historical personnel dosimetry data at Luke AFB, the IRSO has established the following investigation level IAW AFMAN 48-148, paragraph 4.5.2.3:

2.9.1.2. A dose in excess of 125 mrem per quarter for radiation workers.

2.9.1.3. A dose in excess of 400 mrem per month for radiation workers is not to be exceeded.

2.9.1.4. A dose in excess of 5 mrem per month for declared pregnant radiation workers.

2.9.2. If any person receives a dose in excess of the established investigation levels for the month or quarter, an investigation is initiated by the IRSO. A memorandum for record or a formal report is written as necessary or when recommended to document the findings and any corrective actions necessary.

Chapter 3

RADIOACTIVE MATERIAL (RAM) MANAGEMENT

3.1. Radioactive Material Receipt, Storage, and Shipment.

3.1.1. Special precautions shall be taken by the PRSO when receiving and opening packages containing licensed radioactive material under USAF radioactive material permits or NRC license.

3.1.2. Visually inspect the package and notify the IRSO immediately if damaged.

3.1.3. Measure the exposure rate at the package surface and contact the IRSO if greater than expected.

3.1.4. Verify the contents with the packing slip.

3.1.5. Examine the integrity of the final source container.

3.1.6. If anything, unusual is encountered, contact the IRSO.

3.1.7. As specified in 10 CFR 20.1906, Procedures for receiving and opening packages, packages containing in excess of certain specified quantities of radioactive material must be inspected IAW paragraphs 6.1.1 through 6.1.5 and monitored for external radiation and contamination within 3 hours after receipt during working hours and within 3 hours from the beginning of the next working day if it is received after working hours. 56 LRS TMO shall contact the IRSO to inspect and monitor packages. 56 LRS TMO personnel shall not transfer any radioactive material to a unit on the installation without prior coordination with the IRSO.

3.2. Storage.

3.2.1. When approved by the IRSO, sealed sources, which are exempt from license requirement IAW DAFMAN 40-201, paragraph 3.3.2., may be stored in unrestricted areas where containers are properly labeled, secured and radiation levels do not exceed 2 mrem/hr, one meter from any container in the storage configuration.

3.2.2. All non-exempt radioactive materials must be secured from unauthorized removal or access and must be inventoried. The responsible PRSO or commander designated individual is responsible for complying with the requirements in DAFMAN 40-201, paragraph 3.6.3.

3.3. Shipment.

3.3.1. The generating activity must properly identify radioactive material and items containing radioactive materials when sending to 56 LRS TMO for packaging and shipping in accordance with DAFMAN 40-201, paragraph 3.8. 56 LRS TMO is responsible for preparing and transporting radioactive material shipments IAW 10 CFR 71, Packaging and Transportation of Radioactive Material, 49 CFR, Transportation, and Defense Transportation Regulation (DTR), DOD 4500.9-R-PartII, Cargo Movement. The IRSO or the affected PRSO will ensure that all radioactive material shipment comply with all applicable requirements; however, the IRSO or PRSO cannot prepare/certify a shipment for transportation unless a certified hazardous material shipper.

3.4. Managing and Disposal of Radioactive Materials.

3.4.1. Responsibility. Each organization shall assume full responsibility for collection, packaging, storage, and disposal of radioactive waste and/or mixed waste generated from maintenance operations must comply IAW DAFMAN 40-201, paragraph 4.2. Each radioactive waste generating organization shall provide a secured, and isolated area for temporary storage of its own waste, on-site, near the location where it is generated. Each site shall be evaluated and approved by the IRSO.

3.4.1.1. No radioactive materials (including electron tubes) will be disposed of or recycled through any local means to include the Defense Logistics Agency (DLA) – Disposal Services.

3.4.1.2. Any equipment or device containing radioactive material must be processed through the IRSO prior to disposal and recycling through Air Force Radioactive Recycling and Disposal Office (AFRRAD).

3.5. Management of Radioactive Waste.

3.5.1. Managing and disposal of radioactive wastes will comply with the requirements in DAFMAN 40-201, paragraph 4.2. In general, most of the radioactive wastes generated at Luke AFB are low level and the wastes are generated infrequently, such as when a device (e.g., electron tubes and smoke detectors) used for many years is no longer required. The IRSO should be contacted as soon as the item is identified as excess and the IRSO shall provide the generating organizations specific instructions for the proper management and handling of the item.

3.5.2. Disposal Procedures:

3.5.2.1. The generator will initiate a written request for disposal instructions for all non-exempt RAM. If there is a question on whether an article is exempt, contact the IRSO. The request will include the information contained in **Table 3.1**.

Table 3.1. Required information.

1	NSN
2	Nomenclature (Compass, Check course)
3	Quantity
4	Type of radioisotope (chemical symbol and atomic number, i.e. Ra^{226})
5	Physical form (solid, liquid)
6	Chemical form
7	Activity per item in curies (current values with decay taken into account)
8	Intensity in mRem/hr at 10cm from surface of unpacked article
9	Point of Contact

3.5.2.2. For liquid waste, do not fill containers more than half full.

3.5.2.3. The generator will forward this request to the IRSO who will review, approve, and endorse the form. The IRSO will then forward the request to AFRRAD. AFRRAD will provide written disposal instructions to include packaging, labeling, and shipping requirements. Failure to comply with AFRRAD instructions could result in the generator

and/or IRSO being subject to disciplinary action under AF regulations or prosecution under federal law.

3.5.2.4. While awaiting disposal instructions, the generator must store the radioactive waste in a facility with a placard approved by the USAF Radioisotope Committee (RIC). The facility must be an enclosed, covered area that provides enough protection to prevent damage to the package or to the waste itself. The area must have sufficient security to prevent loss or items from being stolen. The waste must be segregated from biological and chemical wastes unless they have been produced as a direct result of permitted operations. Waste comprised of nuclides, having half-lives of less than 65 days, can be held, and allowed to decay until it can be deposed of as non-radioactive waste. This must also be approved in the permit. Areas in which radioactive waste is generated and temporarily stored must be locked.

3.6. Review of Radiation Facility/Source Installation Plans.

3.6.1. Review of Construction and Facility Maintenance. All plans for modification of facilities or design of new facilities, which involve the use of radioactive material or radiation-producing devices must be reviewed and approved by the IRSO to ensure ALARA concept is implemented.

3.6.2. A qualified health physicist, from USAFSAM will be contacted by the IRSO and consulted for design reviews that are beyond the technical capability of the IRSO.

Chapter 4

LASER AND OPTICAL RADIATION PROTECTION PROGRAM

4.1. Laser Safety Program.

4.1.1. Laser Classification: Laser classification is determined in accordance with AFI 48-139. Classifications provide a practical means for delineating the degree of hazard and specifying appropriate controls for each.

4.1.2. The Installation Laser Safety Officer (ILSO) must be notified of any unit owning or operating a class 3B or 4 laser(s), for addition to the base laser inventory. Classification can be found labeled on the equipment or in the instruction. Bioenvironmental Engineering will routinely assess and document potential laser hazards in conjunction with the routine OEH surveillance schedule. The work center will notify the ILSO prior to purchase of class 3B or 4 lasers for approval.

4.2. Laser Safety Training and Controls.

4.2.1. Annual laser safety training is required for users of class 3B or 4 lasers and will be conducted by either the Unit Laser Safety Officer (ULSO) or the ILSO.

4.2.2. Protective equipment:

4.2.2.1. Enclosure of the laser equipment or beam path is the preferred method of control, since the enclosure will isolate or minimize the hazard. Though enclosure is the optimal method of control, this method may not be warranted for some systems and facilities (e.g., laser pointers).

4.2.2.2. The ILSO will recommend the appropriate laser protective eyewear and skin protection for each laser system. Not all lasers will require protective equipment. Users should only wear protective eyewear certified for use by the ILSO.

4.3. Medical Surveillance.

4.3.1. Medical surveillance requirements are limited to personnel who work with class 3B or 4 lasers and will be determined by the Occupation and Environmental Health Working Group Flight Surgeon.

4.4. Laser Overexposures.

4.4.1. Should any suspected adverse exposure to a laser occur, the member should contact the ILSO immediately by whatever is the most expedient method. All other notification and requirements will come through the ILSO as directed by AFI 48-139.

4.5. Commander.

4.5.1. Appoint, in writing, qualified individuals to be the Installation Laser Safety Officers (ILSO) IAW AFI 48-139. The ILSOs will be from the 56th Medical Group Bioenvironmental Engineering Flight.

4.6. Installation Laser Safety Officer (ILSO).

4.6.1. Establishes Luke AFB Laser Safety Committee (LSC) or includes this topic/meeting in conjunction with OEHWG, ESOHC and/or AMC. The LSC will be comprised of: ILSO (will

function as chairman), Wing Safety, Public Health, Flight Medicine, applicable ULSOs. The Luke AFB LSC will meet twice a year (once physically and once by virtual conference). ULSOs will work with the ILSO to ensure all laser safety program compliance requirements are met, training is documented, ULSO appointment letters remain current, and Class 3B/4 lasers are assessed and inventoried effectively.

4.6.2. Notifies Wing Safety Office within one working day of suspected laser accidents/incidents.

4.7. Public Health.

4.7.1. Through the Occupational and Environmental Health Working Group, ensures appropriate medical surveillance for people who work with Class 3B or 4 laser systems.

4.7.2. Reports suspected non-ionizing radiation overexposures brought to their attention to the ILSO, 623-856-7521.

4.7.3. Prepares and distributes reports (AF Form 190, *Occupational Illness/Injury Report*) of suspected and actual overexposures to appropriate authorities within 45 days following a reported overexposure.

4.8. Installation Safety.

4.8.1. Reviews test directives involving the use of non-ionizing radiation sources on the Luke AFB and makes appropriate recommendations with regard to personnel safety.

4.8.2. Coordinates with or consults the ILSO prior to recommending or implementing controls for potential non-ionizing radiation hazards.

4.9. Unit Commander.

4.9.1. Monitors workplace enforcement of this instruction and other restrictions and requirements imposed by the ILSO based on their interpretation of applicable AF or federal directives.

4.9.2. Makes resources available for purchasing safety equipment necessary for safe use of non-ionizing radiation equipment. Refer questions regarding the need for specific equipment items to the ILSO at 623-856-7521.

4.9.3. Designates ULSO in writing for units that use Class 3B or Class 4 lasers (or as determined by the ILSO) and provides current copy to ILSO.

4.9.4. Squadron Commanders will appoint a ULSO whenever a Class 3B or Class 4 laser is owned or operated within their respective unit.

4.9.5. Ensures all of their personnel, including aircrew, who use, operate, repair lasers, or might otherwise be exposed to lasers in their duties, receive initial and annual laser safety training.

4.9.6. Ensures all personnel that have a potential exposure to lasers are equipped with appropriate personal protective equipment (PPE) including laser eye protection (LEP) as determined by the supporting Bioenvironmental Engineering Flight.

4.10. Unit Laser Safety Officer (ULSO).

4.10.1. Prepares proposed laser safety Operating Instructions (OI) and training plans and send them to ILSO for review and approval.

4.10.2. Coordinates with the ILSO prior to initiating projects or work processes involving new laser radiation equipment covered under the Laser Radiation Safety Program. This includes changes to existing equipment, working conditions or activities.

4.10.3. Update the workplace laser radiation systems inventory as changes occur and submit an annual summary to the ILSO each year.

4.10.4. ULSO training is required upon initial duty assignment but there is no annual refresher training required. The Laser Safety Office Training Course can find via USAFSAM ESOH Service Center GeniusSIS platform. The topics include, but are not limited to, laser fundamentals, terminology, exposure limits, medical surveillance practices, controls, and guidance on developing and maintaining a laser and optical radiation protection program. Training certificate will be sent to the ILSO upon completion.

4.11. Workplace Supervisor.

4.11.1. Develops a Laser Radiation Protection Program when operating ANSI class 3B or 4 lasers. The Laser Radiation Protection Program must be approved and reviewed annually by the supporting Bioenvironmental Engineer.

4.11.2. Maintains a copy of ULSO appointment letter signed by the unit commander.

4.11.3. Develops operating procedures to supplement existing system specific technical orders and publications to include, as applicable:

4.11.3.1. Alignment, calibration, firing, and system maintenance procedures.

4.11.3.2. Laser control measures, such as key controls, nominal hazard zone areas, interlocks, beam stops, warning systems, service access panels, protective housing, emission delays, and remote firing.

4.11.4. Protective equipment, such as laser eye protection, skin protection, and ancillary hazard protection from electrical shock and toxic chemicals that are sometimes part of the laser system.

4.11.5. Maintains copies of any manuals that were provided with the laser, incident reports, investigations, and references to any classified documents.

4.11.6. Maintains a laser inventory. As a minimum, the laser inventory will contain the following:

4.11.6.1. Description of each different model of laser used by the unit.

4.11.6.2. Quantity of lasers or laser systems that have an operational or military training use.

4.11.6.3. Manufacturer’s name of each different model of laser.

4.11.6.4. Listing of all the serial numbers of military exempt lasers.

4.11.6.5. ANSI laser classification for each different model of laser.

4.11.6.6. Intended operational use of the laser. (Illuminator, designator, Visible Pointer, IR Pointer, etc.).

4.11.6.7. Power, wavelength, Nominal Ocular Hazard Distance (NOHD), and skin hazard distance.

4.12. Accidents/Incidents.

4.12.1. When a lasing incident occurs during a flying mission, the aircraft commander must make the operational risk management decision to continue or abort the mission. This assessment must include human performance limitations from any apparent injuries (e.g., vision loss, skin burns), sensor damage, and the possibility that the lasing may be repeated.

4.12.2. All cases of suspected lasing incidents shall be reported by the involved aircrew to the Command Post as soon as operationally feasible. Command Post will immediately notify Chief of Safety, Chief of Aerospace Medicine (or on-call Flight Surgeon) and ILSO.

4.12.3. ILSO will conduct an incident investigation.

Chapter 5

ELECTROMAGNETIC FIELD RADIATION (EMFR) OCCUPATION AND ENVIRONMENTAL HEALTH PROGRAM

5.1. EMFR Safety Program.

5.1.1. Recognizing EMFR Systems: Recognition of EMFR systems will be accomplished during Bioenvironmental Engineering routine OEH surveillance. Shop supervisors should notify Bioenvironmental Engineering of any EMFR systems acquired between these periodic surveys. Bioenvironmental Engineering will evaluate all installation EMFR systems.

5.2. Bioenvironmental Engineering.

5.2.1. Evaluates identified EMFR systems to determine whether a system is hazardous. A hazardous system is one capable of producing levels above the EMFR exposure limit in areas accessible by personnel.

5.2.2. Provides control recommendations for hazardous EMFR systems.

5.3. EMFR Exposures.

5.3.1. An individual may be exposed to the EMFR exposure limit without exhibiting any damaging biological effects. The level incorporates, at minimum, a safety factor of 10 times below the threshold for occurrence of biological effects in humans. Limits can be found in AFI 48-109, *Electromagnetic Field Radiation (EMFR) Occupational and Environmental Health Program*.

5.3.2. EMFR exposure levels are established for lower and upper tier environments. Lower tier environments represent locations where EMFR exposures do not exceed the Maximum Permissible Exposures (MPEs) of AFI 48-109. Such locations generally represent work centers or public access areas where personnel would not expect to encounter higher levels of EMFR energy. Upper tier environments represent areas that may be occupied by personnel who accept potential exposure as part of employment or duty, by individuals who knowingly enter areas where such levels are to be expected, or by personnel passing through such areas. Existing physical arrangements or areas, such as fences, perimeters, or weather decks of a ship may be used in establishing these environments.

5.3.3. There are no special EMFR exposure limits for pregnant females. Any level EMFR environment that is safe for the mother is also safe for the developing embryo or fetus. Pregnant workers will follow medical profile requirements.

5.4. Mandatory Posting Requirements.

5.4.1. Appropriate warning signs will be placed at all access points to controlled areas where EMFR levels exceed limits; signs will be visible from all directions of approach. Bioenvironmental Engineering will determine the need for posting in areas where EMFR levels may exceed the controlled exposure limit.

5.4.2. Work center supervisors will ensure required warning signs and safety devices required by Bioenvironmental Engineering are functional before beginning work.

5.5. EMFR Safety Training.

5.5.1. Work center supervisors will ensure individuals who work regularly with or around EMFR systems determined by Bioenvironmental Engineering as hazardous are trained on EMFR safety upon initial assignment to the unit and annually thereafter. The work center supervisor may contact Bioenvironmental Engineering to obtain training material.

5.5.2. The training plan will include: EMFR equipment, locations where MPE can be exceeded, control measures, overview of biological effects, and exposure incident reporting procedures.

5.6. EMFR Overexposure.

5.6.1. May produce reddened or burned skin. Workers may hear "clicking" or "popping". Symptoms of shock and burns may be evident and should be treated accordingly.

5.6.1.1. Once a supervisor has been notified of an individual(s) overexposure to EMFR they must contact the IRSO. The IRSO will direct all follow ups and investigation IAW AFI 48-109.

5.7. Government Contract Originators.

5.7.1. When a project or program requires the use of EMFR equipment on the Luke AFB by contractors:

5.7.1.1. Request a hazard evaluation and written approval for using the equipment according to Chapter 4 of AFI 48-109.

5.7.1.2. Ensure appropriate contract documents include the requirement for the contractor to request a hazard evaluation and written approval for using the equipment.

5.8. Hazard Evaluation and Approval Requirements.

5.8.1. Potentially hazardous EMF radiation producing equipment, not covered by Safety Review Board process, must be evaluated for potential hazards prior to use. To ensure the hazard evaluation is completed in a timely manner, users must submit a written request for evaluation to the IRSO at least 30 days before the expected date of equipment use. Unless it is classified, information necessary to perform this evaluation must be provided with the request (**Note**: See **Attachment 3**).

5.8.1.1. IRSO or their alternate typically provides training to workplace supervisors who then provide the required training to other employees assigned to the workplace.

5.8.1.2. Bioenvironmental Engineering will provide a training outline upon request to assist workplace supervisors with developing a workplace-specific training plan and outline.

5.8.1.3. Training requirements for contractor employees should be included in contract specifications or other appropriate documents. Contractors must comply with federal and state laws dealing with the safe use of EMF radiation producing equipment.

JASON M. RUESCHHOFF
Brigadier General, USAF
Commander, 56th Fighter Wing

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFPD 40-2, *Radioactive Materials (Non-Nuclear Weapons)*, 18 June 2019

AFI 48-109, *Electromagnetic Field Radiation (EMFR) Occupational and Environmental Health Program, 1* August 2014

AFI 48-139, *Laser and Optical Radiation Protection Program, 30* September 2014

AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation and 91(B) Radioactive Material Safety Program*, 13 May 2020

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

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

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

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*

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

USAFSAM Form 1527-2s, *Cumulative Report of Individual Exposure to Ionizing Radiation*

Abbreviations and Acronyms

AFAF—Air Force Auxiliary Field

AFI—Air Force Instruction

AFB—Air Force Base

AFRIMS—Air Force Records Information Management Systems

AFRRAD—Air Force Radioactive Recycling and Disposal Office

ALARA—As Low as Reasonably Achievable

AMC—Aerospace Medicine Council

AMDS—Aerospace Medicine Squadron

DLA—Defense Logistics Agency

DTR—Defense Transportation Regulation

EMFR—Electromagnetic Field Radiation

EPCRA—Emergency Planning and Community-Right-To-Know-Act

ESOHC—Environmental Safety and Health Council

GLD—Generally License Device

ILSO—Installation Laser Safety Officer

IRSO—Installation Radiation Safety Officer

LSC—Laser Safety Committee

MPE—Maximum Permissible Exposure

NOHD—Nominal Ocular Hazard Distance

NRC—Nuclear Regulatory Commission

OEH—Occupational Environmental Health

OEHWG—Occupational & Environmental Health Working Group

OPR—Office of Primary Responsibility

OSL—Optically Stimulated Luminescence

PCS—Permanent Change of Station

PPE—Personal Protective Equipment

PRSO—Permit Radiation Safety Officer

RAM—Radioactive Materials

RAMMIS—Radioactive Material Management Information System

RDS—Records Disposition Schedule

RIC—Radioisotope Committee

RPD—Radiation Producing Devices

RSO—Radiation Safety Officer

SSDR—Sealed Source and Device Registry

TDY—Temporary Duty

ULSO—Unit Laser Safety Officer

URSO—Unit Radiation Safety Officer

Attachment 2

RADIOACTIVE MATERIAL PERMIT SAMPLE

Figure A2.1. Radioactive Material Permit Sample.

DEPARTMENT OF THE AIR FORCE
56TH AEROSPACE MEDICINE SQUADRON (AETC)
LUKE AIR FORCE BASE AZ 85309-1525

XX August 20XX

MEMORANDUM FOR XXXXXXXXXXXXX
XXXXXXXXXXX
XXXXXXXXXXX
ATTN: Mr. XXXXX

FROM: 56 AMDS/SGPB
7219 N. Litchfield Rd.
Glendale, AZ 85309

SUBJECT: Radioactive Material Permit **2018-XXX**

1. In accordance with Air Force Instruction 40-201 *Radioactive Materials Management*, your request to bring radioactive material (RAM) on Luke Air Force Base (LAFB) is approved, subject to the conditions of your request and this letter. A RAM permit number (**2017-XXX**) has been assigned following review and validation of information furnished. Please reference this number in all future correspondence regarding this approval. The permit authorizes XXXXXX XXXXX (Subcontractor), to use radioactive material at locations listed below as executed for XXXX (Contractor) under contract FA3002-08-R-XXXX-RXX, *Design and Repairs for Various Fuels Facilities at Air Force Plant*, for radiography of welds.

RAM Source	**Iridium-192 (Ir-192)**, sealed source, serial number YE1719 Activity: 52 Curies (as of 1 August 2017)
Authorized Locations	AF Plant 42 – Gas Station

2. Applicability: This permit is valid from **XX Aug 18 – XX Sep 11** and only while Client and Contractor have a current contract. This permit approval can be revoked by the Installation Radiation Safety Officer (IRSO) at any time for safety reasons or non-compliance with the conditions of the permit. This approval is only for the devices and locations listed in the table above. Addition of any other item(s) will require advance coordination with the IRSO.

3. Required Notification of Work Schedule or Work Schedule Changes: Client and/or Contractor are responsible for notifying the IRSO of the expected work schedule or changes **one week prior** to beginning work. This permit may cover a range of dates in which the Subcontractor may bring RAM on the installation; however, day-to-day presence of RAM on the installation must be logged.

4. Emergency Procedures: In addition to the emergency protocol associated with Client policies and Subcontractor RAM license, immediately notify the Base Fire Department then the IRSO of any unanticipated release of RAM or conditions that might pose an immediate threat to human health or impact to the environment. Immediately notify IRSO of failure to meet the conditions of this permit or license conditions that are not an immediate threat to human health or environmental contamination.

Agency	Phone
Fire Department	911 (from on-base landline only) (623) 856-6641 (from off-base or cell phone)
Installation Radiation Safety Officer	(623) 856-7521 (duty hours) (623) 856-5600 (off duty primary/Command Post)

5. Additional Procedures: Client, Contractor, and Subcontractor will ensure the following practices are conducted:

a. In addition to Federal and State regulations, keep a copy of this letter and proof of contract as stated above with your RAM source(s) at all times and present it to Installation officials upon request.

b. All RAM and equipment are transported in original shipping container or equivalent.

c. Properly mark the transport vehicle and container in accordance with Code of Federal Regulations Titles 10 and 49.

d. Ensure all RAM brought on the Installation is in possession of approved users or secured.

e. **Do not store RAM on the Installation overnight.**

f. Ensure all operations conducted with RAM meet intent of 'As Low As Reasonably Achievable' (ALARA) principle so radiation exposures are minimized.

g. Restrict all persons who are not Subcontractor employed and trained as approved users of Subcontractor RAM from entering an area of potential exposure above 2 millirem per hour (2 mrem/hr) or greater than two-hundredths millisievert per hour (0.02 mSv/hr) from your RAM or radiation producing device. Annual public dose limits (100 millirem in a year) also apply. Implement proper use of warning signs, barriers, sentries, etc, to enforce this restriction. Conduct proper planning and scheduling to reduce general population traffic around activity.

6. The IRSO may check work activity without prior notice. Violations will be identified immediately and may result in revocation of permit.

7. The Subcontractor licensed RSO or designee shall provide updated information as necessary to the IRSO including:

a. A copy of any amendment to the NRC/State License or NRC Form 241.

b. Any changes to licensee RSO information.

c. Any changes to the contract pertinent to RAM operations regarding your work.

d. Provide on request a listing of authorized users and their contact information.

8. For any questions or concerns regarding this approval letter or the use of RAM on Luke AFB, please contact the Bioenvironmental Engineering staff or myself (Iriso Email address XXXX) at commercial phone 623 856-7521.

XXXXXXX XXXX XX, USAF, BSC
Installation Radiation Safety Officer

Attachment 3

DATA REQUIRED FOR HAZARD EVALUATIONS OF EMF EMITTERS

A3.1. Hazard Evaluation and Approval Requirements for Unclassified Systems.

A3.1.1. All EMFR-producing equipment must be evaluated by IRSO for potential hazards before being used. To ensure the hazard evaluation is completed in a timely manner, users must submit in writing the following information to Bioenvironmental Engineering.

A3.1.2. Frequency.

A3.1.3. Power level (peak).

A3.1.4. Modulation characteristics and beam elevation.

A3.1.5. Waveform [continuous wave (CW) or pulsed].

A3.1.5.1. If pulsed:

A3.1.5.1.1. Pulse repetition frequency (PRF)

A3.1.5.1.2. Pulse width (PW)

A3.1.6. Antenna information:

A3.1.6.1. Size

A3.1.6.2. Beam width

A3.1.6.3. Gain in dBi

A3.1.6.4. Orientation

A3.1.7. Transmission Line information:

A3.1.7.1. Type (one conductor or two conductor--single coaxial or parallel wires)

A3.1.7.2. Shape (rectangular, circular, square, etc.)

A3.1.7.3. Mobile or static system

A3.1.8. Barriers, interlocks, visual or audible alarms in use with the system.

A3.1.9. Site drawing. Include structures, parking lots, areas occupied by individuals, uncontrolled access areas and the existence of potential hazards such as fuel or ordnance storage areas.

A3.1.10. Topographical information.

A3.1.11. Unit safety operating instructions that include training and emergency procedures.

A3.2. Classified Systems.

A3.2.1. Contact the IRSO at DSN 623-856-7521 to schedule an evaluation. Do not discuss classified information over the telephone.