BY ORDER OF THE COMMANDER
TRAVIS AIR FORCE BASE (AMC)

TRAVIS AIR FORCE BASE
INSTRUCTION 48-105

10 JUNE 2016

Aerospace Medicine

RADIATION SAFETY PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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

RELEASABILITY: There are no releasibility restrictions on this publication

---

OPR: 60 AMDS/SGPB

Certified by: 60 MDG/CC
(Col Rawson L. Wood)

Supersedes: TRAVISAFBI 48-105, 4 August 2004

Pages: 25

This instruction provides guidance, procedures, precautionary measures, and responsibilities for the control of radioactive materials (RAM) and radiation-producing devices. This instruction implements AFI 40-201, *Radioactive Materials Management*; AFI 48-148, *Ionizing Radiation Protection*; AFI 48-109, *Electro-Magnetic Field Radiation (EMFR) Occupational and Environmental Health Program*; AFI 48-139, *Laser and Optical Radiation Protection Program*; and AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*. It applies to all activities on Travis Air Force Base (TAFB) to include tenant units as well as contractors who possess, use, handle, store, or bring radiation sources onto the installation. 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 Air Force Form 847 from the field through the appropriate functional chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm**.

SUMMARY OF CHANGES

This document has been revised in its entirety. Major changes include the addition of non-ionizing radiation program requirements.

1. Responsibilities:

1.1. The 60th Air Mobility Wing Commander (60 AMW/CC) will:

1.1.1. In accordance with (IAW) AFIs 40-201, 48-109, 48-139, 48-148, and AFMAN 48-125, designate a member of the 60th Aerospace Medicine, Bioenvironmental Engineering (BE) Flight (60 AMDS/SGPB), or the 60th Medical Diagnostic and Therapeutics, Medical Physics Element (60 MDTS/SGQX) as the Installation Radiation Safety Officer (IRSO) and/or the Installation Laser Safety Officer (ILSO) (both herein after known as RSO).

1.1.2. Provide the 60 AMW RSO, BE, Aerospace Medicine, and Optometry Clinics the resources necessary to carry out provisions required by this instruction.

1.1.3. Through the Travis AFB RSO, advise tenant unit commanders on radiological health and safety.

1.2. All 60th Air Mobility Wing, Group, Squadron, and Tenant Unit Commanders will:

1.2.1. Ensure unit personnel who receive, possess, distribute, use, transfer, or dispose of radioactive materials (RAM) observe the requirements of this instruction, federal, local, and United States Air Force (USAF) policies and regulations.

1.2.2. Appoint in writing a Unit Radiation Safety Officer (URSO) if their unit or workplace uses and/or possess RAM or radiation-producing devices. Send a copy of appointment letters to 60 AMDS/SGPB.

1.2.3. If required, appoint in writing a RAM Permit Radiation Safety Officer (PRSO), as required by AFI 40-201 and AFI 48-148. The PRSO must be a member of the using organization, and meet education and experience requirements IAW AFI 40-201.

1.2.4. Appoint in writing a Unit Laser Safety Officer (ULSO) for units using or possessing American National Standards Institute (ANSI) Class 3B or 4 lasers.

1.2.5. Appoint in writing a Radiation Safety Officer Liaison (RSOL) for tenant unit sites. This individual should be someone with the most technical familiarity with EMFR, laser, ionizing radiation, and applicable regulations.

1.2.6. Ensure Unit PRSO, ULSO, and RSOLs are the IRSO's single point of contact representing their respective units regarding RAM and radiation-producing devices/instruments.

1.2.7. With support from the IRSO, establish and maintain a unit EMFR safety awareness training program.

1.2.8. Ensure workplace supervisors responsible for the operation of potentially hazardous EMFR emitters develop a unit radiation safety awareness training plan to aide in the implementation of the unit training program.

1.2.9. Establish procedures for workers to report suspected EMFR overexposures to the responsible supervisor, and to BE. Support BE investigative efforts and reconstruction of exposure incidents. Ensure these procedures are incorporated into the unit safety awareness training plan.

1.3. **The 60th Air Mobility Wing Installation Radiation Safety and Laser Safety Officer (RSO) will:**

1.3.1. Initiate, supervise, and execute the Travis AFB Radiation Safety Program IAW AFIs 40-201, 48-109, 48-139, 48-148, AFMAN 48-125, and this instruction. Additionally, the 60th Medical Group (60 MDG) has a Medical Group Instruction (MDGI), 48-22, *Radiation Safety and Protection Program,* prescribing the radiation safety program specific to the David Grant Medical Center (DGMC).

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

1.3.3. Provide the following in support of the Travis AFB Radiation Safety Program:

1.3.3.1. Manage the Thermoluminescent Dosimetry (TLD) Program IAW AFMAN 48-125 (when applicable) and in conjunction with 60 MDTS/SGQX, Medical Physics.

1.3.3.2. Coordinate requests for radioactive waste disposal through the United States Air Force School of Aerospace Medicine (USAFSAM) or recycling through 88 ABW/EM (Wright-Patterson AFB, OH).

1.3.4. Investigate the loss, theft, or spill of RAM, and all real or suspected overexposures to radiation IAW AFIs 40-201, 48-109, 48-139, 48-148, and AFMAN 48-125.

1.3.4.1. In the event of contractor loss or release of RAM, and/or suspected overexposures to ionizing radiation from ionizing radiation sources, report to the

USAF Radioisotope Committee (RIC) those portions of the incident that pertain to AF involvement.

1.3.4.2. Recommend procedures to contractors through the installation senior contracting officer.

1.3.5. In conjunction with 60 MDTS/SGQX, Medical Physics, be the authority for contacting Headquarters (HQ) USAF RIC and/or the Nuclear Regulatory Commission (NRC) regarding reportable events.

1.3.6. Be appointed temporarily as a PRSO only when the using organization has no qualified individuals.

1.3.7. Develop and manage an Installation Laser and Optical Radiation Safety Program.

1.3.8. Assist the installation commander in developing and maintaining policies, procedures, and instructions to meet the requirements of AFI 48-139.

1.3.9. Incorporate laser and optical radiation hazard evaluations into the special surveillance processes described in AFI 48-145.

1.3.10. Coordinate the response to suspected laser accidents/incidents as detailed in AFI 48-139.

1.3.11. Ensure that the outdoor use of lasers adheres to federal, military, state, and local regulations.

1.3.12. Ensure that each unit employing military specific lasers maintains a copy of the Air Force Laser Systems Safety Review Board (LSSRB) approval letter and hazard evaluation or safety summary for each system type.

1.3.13. Verify ULSO training is IAW AFI 48-139.

1.3.14. Suspend installation operations involving the operation of laser or other optical radiation sources that pose a significant health risk to personnel, are in clear violation of regulations or requirements, or can negatively impact AF operations, materiel, or real estate.

1.3.15. Maintain a listing of hazardous laser and optical radiation equipment. The list should include nomenclature, classification, wavelength, military organization description, or other hazard descriptors.

1.3.16. Accomplish and document completion of required training IAW AFI 48-139.

1.3.17. Consult with USAFSAM/OE or the Environmental Safety and Occupational health (ESOH) Service Center, as needed, on issues such as hazard evaluations, controls, investigations and/or US Food and Drug Administration (FDA) exemptions.

1.4. **The Unit Radiation Safety Officer Liaison (URSO), Permit Radiation Safety Officer (PRSO), and Unit Laser Safety Officer (ULSO) will:**

1.4.1. As needed, maintain and update an inventory of all RAM, lasers, Generally Licensed Devices (GLDs), and radiation-producing devices, respectively, within their organization. The unit PRSO and/or ULSO must contact the 60 AMW RSO when changes occur.

1.4.2. Coordinate with the 60 AMW RSO for assistance in developing unit radiation safety training and operating instructions (OIs).

1.4.3. Establish a written unit training program IAW AFIs 40-201, 48-109 (EMFR), 48-139 (lasers), 48-148 (RAM and ionizing radiation-producing devices), and AFMAN 48-125 (TLDs).

1.4.4. Document training on each member's AF Form 55, *Employee Safety and Health Record*, or equivalent. The goal of the radiation safety awareness training is to ensure exposures are kept As Low As Reasonably Achievable (ALARA).

1.4.5. Contact 60 AMDS/SGPB, BE or 60 MDTS/SGQX, Medical Physics if assistance is needed in conducting radiation safety awareness training at (707) 423-5490.

1.4.6. Understand and enforce the requirements listed in Attachment 3 of this instruction pertaining to contractors bringing RAM onto Travis AFB or any of its tenant organizations.

1.4.7. Develop and manage a unit laser and optical radiation safety program.

1.4.8. Develop and maintain unit policies, procedures, and instructions to meet the requirements of AFI 48-139.

1.4.9. Assist the unit commander in developing policies, procedures and/or instructions to meet the requirements of AFI 48-139.

1.4.10. Coordinate the response to suspected laser accidents/incidents as detailed in AFI 48-139.

1.4.11. Act as a Point of Contact (POC) for the unit, on laser and other optical radiation safety matters and maintain lines of communication with the RSO, BE, 60 AMW Safety Office, and 60 AMDS Public Health (PH) personnel.

1.4.12. Ensure supervisors and workers are aware of and follow laser and other optical radiation safety procedures described in AFI 48-139, Concepts of Operations/Employment (CONOPS/CONEMPS), Tactics, Techniques, and Procedures (TTPs), Standard Operating Procedures (SOPs), Technical Orders (TOs), manuals, unit instructions, and other applicable guidance documents.

1.4.13. Coordinate laser and other optical radiation evaluation activities with unit command, supervisory personnel, and the RSO.

1.4.14. Suspend unit operations involving the use of laser or any optical radiation sources that pose a significant health risk to personnel, are in clear violation of regulations or requirements, or can negatively impact AF operations, materiel, or real estate. Coordinate with the RSO as needed to maintain safe operations.

1.4.15. Ensure the outdoor use of unit lasers adheres to federal, military, state, and local regulations.

1.4.16. Maintain a copy of the AF LSSRB approval letter and hazard evaluation for each type of military specific laser acquired by the unit (if applicable).

1.4.17. Maintain accountability for all Class 3B and 4 lasers and laser systems and all military specific lasers, regardless of class, possessed by the unit.

1.4.18. Ensure that no military specific laser is released outside of the AF unless it is transferred to another Department of Defense (DoD) Service that has approved the use of the system, has been brought into full compliance with 21 CFR 1040.10 and 1040.11, and has the compliance paperwork filed with the FDA, or is being destroyed IAW with Department of Defense Instruction (DODI) 4160.21-M.

1.5. **60th Aerospace Medicine Squadron Bioenvironmental Engineering (60 AMDS/SGPB) will:**

1.5.1. Maintain a proficient level of knowledge, training, and experience in assessing EMFR hazards in the workplace; perform required measurement attainment; and respond to health issues raised by workers, installation residents, and the general public.

1.5.2. Conduct EMFR health hazard evaluations for new systems, operations, and modified systems in use on the installation and maintain documentation of the evaluation in the Defense Occupational and Environmental Health Readiness System (DOEHRS). Provide guidance and recommendations regarding engineering controls; Personal Protective Equipment (PPE) and warning devices; and post requirements and incorporate other administrative controls as necessary.

1.5.3. Assist unit commanders and workplace supervisors in the development of EMFR safety awareness training programs, particularly in the areas of bioeffects, exposure incident reporting, and identification and control of hazardous areas in the workplace.

1.5.4. During home station and deployed operations, provide guidance to local commanders regarding the potential for personnel injuries from EMFR emissions.

1.5.5. Investigate all alleged or suspected EMFR overexposures. Complete final reports of investigations for submission as described in AFI 48-109, paragraph 2.11.1.6.

1.5.6. Notify and coordinate with USAFSAM, the Air Force Medical Support Agency (AFMSA)/SG3PB, and Air Force Major Command (MAJCOM) on all EMFR overexposure investigations, and provide copies of final documentation for evaluation and possible inclusion in the EMF Radiation Exposure Registry (EMFRER.). Coordinate with 60 AMW Weapons Safety (SEW) on EMF weapon incident investigations.

1.6. **60th Aerospace Medicine Squadron Public Health (60 AMDS/SGPM) will:**

1.6.1. Assist 60 AMW RSO and coordinate medical examinations IAW AFIs 40-201, 48-109, 48-139, 48-148, and AFMAN 48-125.

1.6.2. Review and draft recommended medical surveillance examination (MSE) requirements IAW ANSI Z136 Series, AFI 48-145, *Occupational Health Program*, and AFMAN 48-146, *Occupational and Environmental Health Program Management*, and present these requirements to the installation Occupational & Environmental Health Working Group (OEHWG) for review. Final copies are approved by the installation Occupational and Environmental Medicine (OEM) Consultant.

1.6.3. Ensure medical follow-up examinations are conducted for persons identified as having been potentially overexposed to lasers or other optical radiation.

1.6.4. Work with BE in investigating EMFR incidents and provide medical surveillance feedback to BE.

1.6.5. For EMFR overexposure incident cases, initiate and complete an occupational illness report (AF Form 190) in the Air Force Safety Automated System (AFSAS), with input from BE and the investigating physician IAW AFI 48-145. The medical provider will document findings in the patient's medical record for all incident cases of overexposed to EMFR.

1.6.6. Ensure medical follow-up examinations for EMFR overexposed persons are conducted as specified by the occupational medicine consultant at USAFSAM/FE.

1.7. **60th Aerospace Medicine Squadron Optometry (60AMDS/SGPE) will:**

1.7.1. Conduct baseline and termination eye examinations for personnel working with class 3B or 4 lasers IAW AFI 48-139.

1.7.2. Ensure that examinations and care are provided immediately for all suspected overexposures involving lasers or other optical radiation sources.

1.7.3. Document all examinations in individual medical records.

1.7.4. Ensure that aircrew only use laser eye protection certified Safe-to-Fly by the applicable MAJCOM, Combatant Command, Air Force Reserve Command, Air National Guard Bureau, or equivalent.

1.7.5. Assist the RSO with investigations of all suspected overexposures involving lasers or other optical radiation sources.

1.8. **60 AMW Installation Safety (60 AMW/SE) will:**

1.8.1. Review and recommend policies and procedures to prevent mishaps from ancillary safety hazards such as electrocution, fire hazards, etc. Periodically evaluate procedures and inspect facilities to ensure compliance with federal, military, state, and local safety requirements.

1.8.2. Investigate accidents/incidents related to exposures causing operational impacts, causing damage to systems and/or sensors, or ancillary safety hazards associated with a laser or any optical radiation system IAW AFI 91-204, *Safety Investigations and Reports*. The 60 AMW RSO will provide 60 AMW/SE with a current inventory on an as needed basis.

1.9. **60 Civil Engineer Squadron Installation Management Flight (60 CES/CEI) will:** Direct requests for RAM disposal/recycling to the 60 AMW RSO.

1.10. **60th Civil Engineer Squadron Fire and Emergency Services (60 CES/CEF) will:**

1.10.1. Ensure the location and characteristics of RAM used or stored on TAFB are properly identified in fire planning and updated as notified by the 60 AMW RSO. The 60 AMW RSO will provide a current inventory on an as needed basis.

1.10.2. Ensure fire protection personnel are trained on the hazards associated with radiation sources. This training is provided by the 60 AMW RSO.

1.10.3. Notify the 60 AMW RSO and using agency source custodian of fires in facilities with RAM.

1.10.4. Evaluate procedures and facilities IAW National Fire Protection Association 115, *Standard for Laser Fire Protection*.

1.10.5. Develop emergency response plans, procedures and training lesson plans for firefighting operations involving facilities and systems utilizing Class 3B or Class 4 lasers which have the potential to be a fire hazard (e.g., laboratory/research, Explosive Ordnance (EOD), or tactical lasers). The 60 AMW RSO will provide a current inventory on an as-needed basis.

1.10.6. Ensure firefighters assigned to locations with lasers or any optical radiation systems having the potential to be a fire hazard receive initial and annual training on emergency response to accidents/incidents involving those systems. In addition to fire hazard training, this training will include laser safety training developed by USAFSAM/OED.

1.11. **60th Civil Engineer Squadron Readiness and Emergency Management Flight (60 CES/CEX) will:** With guidance from the 60 AMW RSO, conduct response operations involving nuclear or radiological materials IAW AFI 48-148 and AFI 40-201.

1.12. **60th Contracting Squadron (60 CONS) will:**

1.12.1. Include compliance with AFI 48-139, AFI 48-148 AFI 48-109, and AFI 40-201 as a requirement in all contracts.

1.12.2. Inform requiring activities to obtain 60 AMW RSO approval for contractor use of RAM, radiation-producing devices, or lasers on base, prior to use. See Attachment 3 for further guidance.

1.12.3. Obtain 60 AMW RSO approval before allowing any base agency to purchase RAM, radiation-producing devices, or lasers. Additional guidance regarding purchases for 60 MDG can be found in MDGI 48-22.

1.13. **60th Aerial Port Squadron (60 APS/TROCS) will:** Ensure packages are in compliance with 49 *CFR* 17 through 199, and AFPD 24-2, *Preparation and Movement of Air Force Material*.

1.14. **Workplace Supervisors will:**

1.14.1. Protect the health of personnel by ensuring all operations involving radiation adhere to all radiation safety instructions, TOs, and workplace OIs.

1.14.1.1. Ensure deviations are coordinated and approved by the 60 AMW RSO. Supervisors within DGMC should coordinate with the 60 MDTS/SGQX, Medical Physics.

1.14.1.2. Coordinate all new and revised OIs, pertaining to radiation safety, with the 60 AMW RSO prior to publishing. Supervisors within DGMC should coordinate with 60 MDTS/SGQX, Medical Physics.

1.14.2. Conduct and document training IAW AFIs 40-201, 48-109, 48-139, 48-148, and AFMAN 48-125.

1.14.3. Enforce the TLD Program and ensure personnel wear of TLD badges IAW AFMAN 48-125.

1.14.4. Provide all necessary PPE and ensure its proper use.

1.14.5. Inform the 60 AMW RSO, or 60 MDTS/SGQX, Medical Physics. if the member works at the 60 MDG, and Unit RSO **immediately,** of new radiation sources (i.e., RAM, GLDs) or radiation-producing devices (i.e., X-rays, GLD, etc.), or changes to existing sources to ensure all radiation hazards in the workplace are evaluated.

1.14.6. Provide all personnel working with radiation sources, or radiation-producing devices, annual radiation safety training. Document training on each individual's AF Form 55 or equivalent.

1.14.7. Refer declared pregnant females to 60 AMDS, Public Health for a pregnancy evaluation **immediately**.

1.14.8. Report any suspected or alleged overexposures **immediately** to the 60 AMW RSO, or to 60 MDTS/SGQX, Medical Physics if the member works at the 60 MDG.

1.14.9. Notify the 60 AMW RSO of unsafe work practices or hazardous conditions involving RAM or radiation-producing devices or 60 MDTS/SGQX, Medical Physics if the member works at the 60 MDG.

1.14.10. Assist ULSOs in implementing AFI 48-139 by developing unit procedures and providing training for workers and visitors, as applicable.

1.14.11. Ensure lasers and optical radiation systems are either FDA compliant, or in the case of military-specific lasers, have been approved by the AF LSSRB prior to acquisition/fielding. When necessary, request approval from the AF LSSRB through the Air Force Safety Center (AFSEC)/SEW for military specific lasers.

1.14.12. Ensure approved laser systems in use on the installation are accounted for through Precision Measurement Equipment Laboratory (PMEL) for industrial or Medical Equipment Repair Center (MERC) (or the HAZMAT pharmacy) for medical items.

1.14.13. In the event of a suspected laser accident/incident, ensure that emergency medical treatment is sought immediately.

1.14.14. Immediately report to the ULSO any suspected laser or optical radiation overexposure, unsafe condition, and/or change in usage that could change the hazard assessment.

1.14.15. Ensure users of any Class 1M, 2M, 3R, 3B or 4 FDA compliant laser, military specific laser, or optical radiation sources are trained upon initial assignment to the unit and annually thereafter. This extends to those individuals that conduct routine maintenance on any Class 3B or 4 embedded lasers. Criteria for training are detailed in the ANSI Z136 Series and AFI 48-139.

1.14.16. Ensure incidental personnel (e.g., housekeepers) are not allowed to work around a laser when it is on and are adequately trained on procedures and policies in areas with active lasers or other optical radiation systems. As a minimum, personnel shall be trained on safe work practices and descriptions of warning signs and hazard zones.

1.14.17. Ensure that visitors receive training, PPE such as laser eye protection or skin protection (when required), and permission to enter a laser controlled area. As a minimum, visitors shall be trained on safe work practices, specific hazards, and

procedures to follow in the event of a suspected overexposure to laser or other optical radiation.

1.14.18. Document training regarding safe use and hazards from lasers and optical radiation sources. Verify the individual user's annual safety training IAW AFI 48-139.

1.14.19. Ensure that the outdoor use of lasers and optical radiation systems adheres to federal, military, state, and local regulations.

1.14.20. Ensure workers under their supervision are aware of and follow safety procedures outlined in AFI 48-109, equipment technical manuals, and the unit EMFR safety awareness training program.

1.14.21. Prepare an EMFR safety awareness training plan to provide initial training for newcomers and refresher training for system operators, maintenance personnel, and other workers assigned to duties in Upper Tier as well as action level environments.

1.14.22. Ensure the EMFR safety awareness training plan includes the topics indicated in AFI 48-109, paragraph 4.4.1.

1.14.23. Ensure ionizing and non-ionizing radiation operations risks and hazards of use are included in the section's Job Safety Training Outline (JSTO) and that they are reviewed on an annual basis as required. If operations, risks and/or hazards change, ensure all personnel are briefed on those changes and annotate on the AF Form 55.

1.14.24. Coordinate EMFR survey and measurement activities with command and supervisory personnel and ensure these individuals are kept informed of the status of all such activities, particularly during investigations of suspected or actual overexposures.

1.14.25. Inform BE and request a hazard assessment survey for each new EMFR system prior to operation. Notify BE of any physical or operational changes that could increase the power density of the field generated by the emitter.

1.14.26. Ensure work areas identified by BE as hazardous EMFR areas are clearly posted.

1.14.27. Ensure proper corrective actions are accomplished, whenever a risk assessment code (RAC) is assigned to a hazardous EMFR situation.

1.15. **Individuals/workers will:**

1.15.1. Comply with AFIs 40-201, 48-109, 48-139, 48-148, AFMAN 48-125, and MDGI 48-22.

1.15.2. Minimize personal exposure to radiation IAW radiation safety training and/or ALARA policy. Follow all safety precautions to ensure exposures to radiation are ALARA (ionizing) or below applicable limits (non-ionizing).

1.15.3. Report incidents of suspected overexposures to the supervisor **immediately**.

1.15.4. Notify the 60 AMW RSO, or 60 MDTS/SGQX, Medical Physics if the member works at the 60 MDG, of any off-duty, **non-AF,** radiation work (i.e., other employment), and provide monitoring results for inclusion in the Master Radiation Exposure Registry.

1.15.5. Individuals on the TLD Program will notify the 60 AMW RSO, or 60 MDTS/SGQX, Medical Physics if the member works at the 60 MDG, before receiving medical diagnostic testing or treatment involving RAM. If not on the TLD program, it is not necessary to make this notification.

1.15.6. Declare their condition to their supervisor and Primary Care Manager (PCM) if they believe they may be pregnant. A non-military or civilian member is encouraged to notify her commander, workplace supervisor, and 60 AMDS/Public Health of her pregnancy. Note: It is important to remember that it is the decision of a civilian whether or not she declares pregnancy.

1.15.7. Control laser and optical radiation hazards by following procedures in AFI 48-139, CONOPs, TTPs, SOPs, TOs, manuals, and unit instructions.

1.15.8. Ensure that lasers and laser systems are either FDA compliant or, in the case of military-specific lasers, have been approved by the AF LSSRB prior to acquisition/fielding.

1.15.9. Ensure that warning signs, safety devices, and PPE are functional and in place before operating lasers or optical radiation systems.

1.15.10. Immediately report to the workplace supervisor and the ULSO any suspected laser or optical radiation overexposure, unsafe conditions, and/or change in usage that could change the hazard assessment.

1.15.11. Ensure that the outdoor use of lasers adheres to federal, military, state, and local regulations.

1.15.12. Follow safe work procedures given in AFI 48-109, equipment TOs, manuals, and unit OIs.

1.15.13. Follow procedures established by the supervisor to ensure safe working conditions.

1.15.14. Ensure required warning signs and safety devices are in place and functional before beginning work.

1.15.15. Immediately report any suspected EMFR overexposure and any unsafe work condition to their supervisor. Ensure the AF Form 978 is completed and forwarded to 60 AMW/SE for proper classification of mishaps.

2. Nonionizing Radiation:

2.1. **Electro-Magnetic Frequency Radiation (EMFR).**

2.1.1. Unit Commanders will establish a unit EMFR safety awareness training program IAW AFI 48-109. BE shall review the program during its routine shop inspections.

2.1.2. Any incident in which personnel are potentially exposed to EMFR in excess of the permissible exposure level will be immediately reported to the 60 AMW RSO,at 60 AMDS/SGPB, building 791, (707) 423-5490 DSN: 799. Exposure incidents that occur during non-duty hours will be reported to the 60 AMW Command Post (60 AMW/CP), (707) 424-5517. The Command Post will notify 60 AMDS/SGPB.

2.1.3. Owning unit commanders must coordinate modification and construction plans for facilities intended for use with operations involving EMFR with the 60 AMW RSO.

2.2. **Laser Radiation:**

2.2.1. Incidents in which personnel suspect they have been exposed to laser radiation in excess of the maximum permissible exposure, or complaints of persistent visual disturbances after working with lasers, must be reported to the 60 AMW RSO and 60 AMDS/SGPB, building 791, (707) 423-5490 DSN: 799. Exposure incidents that occur during non-duty hours will be reported to the 60 AMW/CP, (707) 424-5517. The Command Post will notify 60 AMDS/SGPB.

2.2.2. The potentially exposed individuals will report to 60 MDG emergency room for examination as soon as practical. Individuals with suspected skin exposure will also report to 60 MDG, for examination as soon as practical.

2.2.3. Owning unit commanders must coordinate modification and construction plans for facilities intended for use with laser operations with the 60 AMW RSO.

2.2.4. Personnel working with class 3B or 4 lasers require pre-employment and termination eye examinations IAW AFI 48-139. Travis AFB personnel and supervisors will coordinate with 60 AMDS/SGPB (to ensure documentation of exam completion in ASIMS) and schedule with 60 AMDS/SGPE Optometry Clinic, (707) 423-7171.

2.3. **Ultraviolet (UV) Radiation:**

2.3.1. Personnel shall not be exposed to occupationally produced UV radiation (e.g., welding arcs, damaged metal halide lamps; non-destructive inspections lamps) in excess of the Threshold Limit Value (TLV) specified in the most current American Conference of Governmental Industrial Hygienist (ACGIH TLV) and Biological Exposure Indices (BEI) booklet. BE will assist shop supervisors and personnel in identifying areas and conducting surveys where hazards may exist.

2.3.2. Workers required to perform duties outdoors for extended periods in the sun are urged to keep skin covered (e.g., long sleeved shirts, hats, etc.,) consistent with duties and safety requirements. Additionally, they will use sun block on exposed skin.

2.3.3. Incidents in which personnel suspect they have been occupationally exposed to UV radiation or complain of persistent visual disturbances after working with UV, must seek medical assistance, report the incident to the 60 AMW RSO at 60 AMDS/SPGB building 791, (707) 423-5490. Exposure incidents that occur during non-duty hours will be reported to the 60 AMW/CP, (707) 424-5517. The Command Post will notify 60 AMDS/SGPB. Individuals will report to the emergency room for medical assistance. **Except** occupationally related sunburns will not be reported to the 60 AMW RSO. Any applicable unit safety incident reporting procedures will also be followed.

2.3.4. Coordinate modification and construction plans for facilities intended for use with UV radiation operations with the 60 AMW RSO.

2.3.5. Non-AF organizations, including contractors/subcontractors, who desire to bring a non-ionizing radiation source/device onto Travis AFB must follow the procedures in Attachment 3.

3. Ionizing Radiation:

3.1. Ionizing radiation exposures must be maintained below limits published in 10 CFR 20, AFI 48-148, and AFMAN 48-125, and kept ALARA. BE will assist shop supervisors and personnel in identifying areas and conducting surveys where ionizing radiation hazards may exist.

3.1.1. Local TLD investigation action levels (IAL) are shown in Attachment 2 (if applicable). The 60 AMW RSO established these on the basis of dose histories in these workplaces.

3.2. Personnel involved in radiological operations on Travis AFB must use all reasonable means available (i.e., time, distance, and shielding) to minimize potential radiation exposure from all ionizing radiation sources (i.e., RAM, GLDs, X-rays).

3.2.1. BE and Medical Physics manage the TLD Program for civil service and USAF personnel at Travis AFB IAW AFMAN 48-125. Personnel enrolled in the TLD Program will receive training from BE or 60 MDTS/SGQX, Medical Physics, prior to performing potential radiation exposure duties.

3.2.2. Upon initial assignment, personnel assigned to shops enrolled in the TLD Program must contact BE building 791, or 60 MDTS/SGQX, Medical Physics, if the member works at 60 MDG, for enrollment in the program and issue of a TLD prior to beginning duties. Contractors are responsible for their own monitoring program. AF personnel are not authorized to wear contractors' monitoring devices unless a suitable AF monitoring means accompanies the devices.

3.2.3. Personnel will wear and store their TLDs IAW guidelines in AFMAN 48-125, and the issuing service (i.e., BE or 60 MDTS/SGQX, Medical Physics). Misuse or mishandling of TLDs (medical-legal documentation), intentional or otherwise, will be investigated.

3.3. All personnel working with RAM (both permitted and exempt GLD) must adhere to safe and healthful work practices whenever handling RAM. Obtain additional guidance on safe practices and contamination control from the 60 AMW RSO or 60 MDTS/SGQX, Medical Physics, (References: AFI 40-201 and AFI 48-148).

3.4. Any incident in which personnel are potentially exposed to ionizing radiation in excess of exposure limits must be immediately reported to the 60 AMW RSO, 60 AMDS/SGPB, building 791 (707) 423-5490, or 60 MDTS/SGQX, Medical Physics, if the member works at 60 MDG. Exposure incidents that occur during non-duty hours will be reported to the 60 AMW/CP, (707) 424-5517. The Command Post will notify 60 AMDS/SGPB.

3.4.1. Supervisors must account for all affected personnel and be assembled in an area away from the hazard area. Do not allow personnel to leave the area until cleared by the 60 AMW RSO or designated representative. **Note:** Record events leading to exposures, including: circumstances, operating parameters, amount and type of isotopes if applicable, names of personnel exposed, where the incident occurred, and an estimate of the extent of contamination (if RAM or GLD is dispersed).

3.4.2. Within 5 working-days from the date of the incident, the 60 AMW RSO or 60 MDTS/SGQX, Medical Physics, must receive a complete **written** report from the

user. The report must contain a detailed description of the incident, a chronological description of how the incident was handled, and preventive measures taken to ensure the incident will not be repeated. Other reporting instructions are detailed in AFI 40-201 and AFI 48-148. The 60 AMW RSO or 60 MDTS/SGQX, Medical Physics, will communicate with HQ USAFE/SGO and the USAF RIC as necessary. **Note:** The USAF RIC makes all required notices to the NRC.

3.4.3. Any applicable unit safety incident reporting procedures will also be followed.

3.4.4. New or modified uses of RAM or ionizing radiation-producing devices must be reported to and approved by the 60 AMW RSO, or 60 MDTS/SGQX, Medical Physics, if the member works at 60 MDG.

3.5. Modifications and construction plans for facilities intended for use with operations involving ionizing radiation or RAM must be coordinated with the 60 AMW RSO, or 60 MDTS/SGQX, Medical Physics, if involving 60 MDG.

3.6. RAM.

3.6.1. Permitted RAM will be handled IAW AFI 40-201.

3.6.2. GLDs will be handled IAW 10 CFR 31.5 and USAF RIC guidance.

3.6.3. The PRSO must ensure all permitted RAM is leak tested and inventoried IAW the permit conditions.

3.6.3.1. The unit or organization permittee shall retain custodianship, control, receipt, storage, and issue of NRC licensed RAM covered by an AF-held license.

4. Organizations Acquiring/Using RAM and/or Radiation-Producing Devices Through Any Contracting Mechanism (e. g., US Army Corps of Engineers, Simplified Acquisition of Base Engineering, Geographically Separated Units (GSUs), Operations/Maintenance, contracts etc.) must:

4.1. Comply with AFI 40-201 requirements for non-AF use of RAM and radiation-producing devices.

4.1.1. Non-AF organizations must send written requests to the 60 AMW RSO at least 30 calendar-days prior to use. At GSUs, contractors will submit this information to the RSOL, who will pass it to the 60 AMW RSO. The request must include the information listed in Attachment 3.

4.1.2. For contractors, these requirements must be included in the statement of work. **Note:** Contractors will not bring RAM onto Travis AFB without the written consent of the 60 AMW RSO.

4.2. USAF RAM Permits.

4.2.1. The 60 AMW RSO will determine if a permit or license is needed before anyone can possess or use RAM on Travis AFB property.

4.2.2. The requestor must submit applications for permits through the 60 AMW RSO. The requestor will prepare the application in accordance with AFI 40-201, paragraph 2.20.1.

4.2.3. Organizations desiring to renew an expiring RAM Permit should contact the 60 AMW RSO at least 60 days prior to the permit expiration date. Renewal will consist of preparation and submission of a complete, stand-alone application to the USAF RIC.

4.2.4. Organizations with permits no longer requiring the use of RAM should transfer, terminate, or dispose of the material. Transfer, termination, or disposal guidelines are outlined in AFI 40-201. Contact the PRSO and 60 AMW RSO for assistance with transfer, termination, or disposal.

5. RAM Receipt or Shipment:

5.1. Shipping and receiving RAM (including GLDs) must be done in accordance with 10 CFR 71 and 49 CFR 100 through 199, and AFPD 24-2.

5.2. Shipping and receiving procedures are summarized in Attachment 4.

5.3. The 60 AMW RSO will provide instructions and assistance as needed.

6. RAM Storage:

6.1. Keep all RAM in a RAM storage area or a locked enclosure separate from other items to insure personnel who are not familiar with RAM are not accidentally exposed to ionizing radiation. Proper storage techniques and labeling requirements are outlined in AFI 40-201 and 10 CFR Part 20.

6.2. A storage area from which RAM has been permanently removed must be surveyed by qualified individuals approved by the 60 AMW RSO. Written clearance must be received before the area may be used for other purposes.

7. RAM Movement within the 60 AMW:

7.1. Personnel must account for the location of RAM and prevent the movement of RAM to unauthorized persons, or locations, without adequate handling or storage facilities. Notify the 60 AMW RSO if you plan to move RAM.

7.2. Transport RAM off the installation only in adequately shielded and authorized containers per Department of Transportation (DoT) regulations (49 CFR 171-199) and as authorized by the permit.

7.2.1. Vehicles will require the appropriate DoT placards.

7.2.2. All users must have proper survey instruments when transporting RAM. Ask BE for assistance.

8. RAM Disposition:

8.1. Disposition of licensed/permitted RAM may only be carried out by transfer to another licensed agency or to a licensed disposal contractor IAW AFI 40-201.

8.2. Disposal of RAM is the responsibility of the using organization. Disposal procedures for AF owned RAM are specified in AFI 40-201.

JOEL D. JACKSON, Colonel, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

10 CFR Part 20, *Standards for Protection Against Radiation*

10 CFR Part 31.5, *NRC General License Requirements*

29 CFR 1910.1096, *Ionizing Radiation*

49 CFR Parts 171 through 199, *Transportation Requirements*

AFI 40-201, *Radioactive Materials Management,* 17 September 2014

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

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

AFI 48-145, *Occupational and Environmental Health Program*, 22 July 2014

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

AFI 91-204, *Safety Investigations and Reports*, 12 February 2014

AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry,* 4 October 2011

AFMAN 33-363, *Management of Records*, 1 March 2008

AFMAN 48-146, *Occupational & Environmental Health Program Management*, 9 October 2012

MDGI 48-22, *Radiation Safety and Protection Program*

Prescribed Forms

No prescribed forms

Adopted Forms

AF Form 55, *Employee Safety and Health Record*

AF Form 190, *Occupational Illness/Injury Report*

AF Form 847, *Recommendation for Change of Publication*

AF Form 978, *Supervisor Mishap Report*

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

Abbreviations and Acronyms

60 AMDS—60th Aerospace Medicine Squadron

60 AMDS /SGPB—60th Aerospace Medicine Squadron Bioenvironmental Engineering

60 AMDS /SGPE—60th Aerospace Medicine Squadron Optometry

60 AMDS/SGPM—60th Aerospace Medicine Squadron Public Health

60 AMW—60th Air Mobility Wing

60 AMW/CC—60th Air Mobility Wing Commander

60 AMWCP—60th Air Mobility Wing Command Post

60 CES/CEI—60th Civil Engineering Squadron Installation Management Flight

60 CES/CEF—60th Civil Engineer Squadron Fire and Emergency Services

60 CES/CEX—60th Civil Engineer Squadron Readiness and Emergency Management Flight

60 CONS—60th Contracting Squadron

60 LRS/LGRSDT—60th Logistics Readiness Squadron Packing and Crating or Transportation Management

60 MDG/CC—60th Medical Group Commander

60 MDTS/SGQX—60th Medical Diagnostics and Therapeutics Squadron Diagnostic Imaging

AFB—Air Force Base

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFOSHSTD—Air Force Occupational Safety and Health Standard

AFPD—Air Force Prescribing Directive

AFRIMS—Air Force Records Information Management System

ALARA—As Low as Reasonably Achievable

BE—Bioenvironmental Engineering

DGMC—David Grant Medical Center

DoE—Department of Energy

DoT—Department of Transportation

EMFR—Electro-Magnetic Frequency Radiation

GLD—Generally Licensed Devices

GSU—Geographically Separated Units

IAL—Investigation Action Level

IAW—In Accordance With

IBIS—Inflight Blade Inspection System

JSTO—Job Safety Training Outline

Laser—Light Amplification by Stimulated Emission of Radiation

LSO—Laser Safety Officer

OI—Operating Instruction

OPR—Office Primary Responsibility

PRSO—Permit Radiation Safety Officer

RAM—Radioactive Materials

RDS—Records Disposition Schedule

RIC—Radioisotope Committee

RSO—Radiation Safety Officer

RSOL—Radiation Safety Officer Liaison

SOP—Standard Operating Procedures

TLD—Thermoluminescent Dosimeter

ULSO—Unit Laser Safety Officer

USAF—United States Air Force

UV—Ultraviolet

Terms

As Low As Reasonably Achievable (ALARA) Concept—Air Force (AF) philosophy for working with ionizing radiation and Radioactive Materials (RAM). Establishes a set of management and administrative actions to ensure radiation doses are minimized to the greatest extent possible.

Generally Licensed Devices (GLD)—A generally licensed item, as defined and listed in 10 CFR 31.5, is a device that contains RAM and is used for detecting, measuring, or controlling moisture, density, chemical composition, and level, and for producing light or producing an ionized atmosphere. Examples of these devices include Inflight Blade Inspection System (IBIS) indicators, ice detectors, self-luminous exit signs, gas chromatographs, compasses (with tritium dials), certain fill-level gauges, certain density gauges, certain fixed and portable gauges, certain chemical agent monitors, counterweights, and certain lenses. There are other categories of generally licensed devices defined in 10 CFR 31.3, 31.7, 31.8, 31.10, 10 CFR 40.13, and 10 CFR 40.22.

Radiation Safety Officer(60 AMW RSO)—Focal point for radiation safety on Travis AF Base AFB (AFB) and appointed in writing by the 60 Air Mobility Wing (60 AMW) Commander. Must meet requirements specified in Air Force Instruction (AFI) 40-201.

Ionizing Radiation—Particulates or electromagnetic energy produced from the decay of unstable elements, which may produce ions that interact with matter. Ionizing radiation may also be produced in the form of X-rays. The different types of ionizing radiation include Alpha, Beta, Gamma, X-ray, and most rarely, Neutron radiation.

Lasers—Acronym of Light Amplification by Stimulated Emission of Radiation. Lasers, broadly speaking, are devices that generate or amplify light, just as transistors generate and amplify electronic signals at audio, radio, or microwave frequencies.

Laser Safety Officer or Unit Laser Safety Officer (ULSO)—Organization focal point for laser safety and appointed in writing by the unit commander. Must meet requirements specified in AFI 48-139.

Non-Ionizing Radiation—Refers to any type of electromagnetic radiation that does not carry enough energy per quantum to ionize atoms or molecules—that is, to completely remove an electron from an atom or molecule.

Permit Radiation Safety Officer (PRSO)—Specified by the RAM Permit and assigned duties IAW AFI 40-201 for the specific permit. Appointed in writing by commander of organization owning RAM Permits.

Radioactive Materials (RAM)—Unstable elements, the decay of which produces ionizing radiation.

RAM Permit—A permit issued by the United States Air Force (USAF) Radioisotope Committee (RIC) (HQ AFMOA/SGOR) In Accordance with (IAW) AFI 40-201 regulating the possession, use, maintenance, and disposal of a non exempted instrument or items containing RAM (for AF agencies). For non-AF agencies, a permit issued by the Nuclear Regulatory Commission (NRC) or an agreement state.

Radiation-Producing Devices—Includes ionizing and non ionizing radiation devices exempt from permits or other regulations under AFI 40-201. Examples are radio frequency emitters/antennas and X-ray machines.

Thermoluminescent Dosimeter (TLD)—Badge issued by Bioenvironmental Engineering (BE) or Medical Physics to monitor personal exposure to ionizing radiation in certain jobs identified as having an exposure risk by the Travis AFB Radiation Safety Officer.

Attachment 2

ABNORMAL EXPOSURE CRITERIA

A2.1. The 60th Air Mobility Wing (60 AMW) Radiation Safety Officer (RSO) or 60th Medical Diagnostic and Therapeutics Medical Physics (60 MDTS/SGQX): Investigates levels above the Investigation Action Level (IAL). The dose will be corrected by reviewing historical doses by person and the highest dose received in the monitoring period by anyone in the shop. Current IALs can be found by contacting 60 MDTS/SGQX) for David Grant Medical Center (DGMC) personnel or by contacting the 60th Aerospace Medicine Bioenvironmental Engineering Flight (60 AMDS/SGPB) for 60 AMW Veterinary Clinic and Non-Destructive Inspection (NDI) personnel. The IALs for the Veterinary Clinic and NDI are set at 10% of the occupational limit, or 0.125 rem per quarter. The MDG IALs may change regularly based upon frequency of procedures being performed or equipment used.

Attachment 3

NON-AIR FORCE USE OF RADIATION SOURCES APPLICATION REQUIREMENTS

A3.1. Use of Radioactive Material (RAM):

A3.1.1. Air Force Instruction (AFI) 40-201, *Radioactive Materials Management,* sets United States Air Force (USAF) policy for using RAM. It applies to all civilians, civilian contractors, Department of Defense (DoD), Department of Energy (DoE), and DoE prime contractor personnel bringing RAM onto Air Force (AF) installations.

A3.1.2. Non-AF organizations that bring RAM onto USAF installations, or conduct operations involving RAM on USAF installations, must obtain the approval in writing from the installation commander or his/her designee. To obtain approval, a contractor must forward an application to the Travis AFB Radiation Safety Officer (RSO) at 60th Aerospace Medicine, Bioenvironmental Engineering Flight (60 AMDS/SGPB), building 791, (707) 423-5490, with a courtesy copy to the 60 AMW Contracting Officer at least 30 calendar days before the planned date for commencement of activities on the installation if possible. Contractors operating at Travis AFB will forward the following requirements to the 60 AMW RSO via the site RSO liaison (RSOL):

A3.1.2.1. A description of the proposed activities should be entered on Nuclear Regulatory Commission (NRC) Form 241.

A3.1.2.2. The name, local address, and telephone number for the responsible local representative; and the name, address, and telephone number of the Radiation Safety Officer named on their license.

A3.1.2.3. Current copy of the applicable NRC, or Agreement State License. Expired licenses are unacceptable. To be valid at the installation, the license must either specifically state the installation by name on the license, or state approval for work at temporary job sites anywhere in the United States where the NRC or Agreement State maintains jurisdiction. DoE or DoE prime contractors must provide, in lieu of a license, written certification of their exemption from NRC licensing requirements and cite the applicable exemption of 10 CFR.

A3.1.2.4. This part of the AF contract describing work to be done at the installation and the inclusive dates of such work.

A3.1.2.5. Acknowledgement that the RSOL or 60 AMW RSO can make periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to AF personnel and prevent potential contamination of government property. The RSOL or 60 AMW RSO must identify deficiencies to the contracting officer for corrective actions. In addition, the RSOL and 60 AMW RSO have authority to suspend contractor operations believed to be unsafe.

A3.1.2.6. Copies of the most recent leak test results (not over 180 days old) for sealed sources.

A3.1.2.7. Copies of training certificates for authorized users.

A3.1.2.8. Contractors will adhere to 10 CFR and 49 CFR sections pertaining to transportation of RAM.

A3.1.2.9. Contractors must notify a Geographically Separated Unit (GSU) RSOL or 60 AMW RSO when RAM arrives on their installation, and when the RAM is removed from the installation.

A3.2. Use of Lasers:

A3.2.1. Non-AF organizations required to use laser Classes 3B or 4, on Travis AFB property must submit a written request for approval at least 30 calendar days before commencement of activities, which require the use of a laser.

A3.2.2. Contractors must submit their request to 60 AMDS/SGPB, building 791, (707) 423-5490, with a courtesy copy to the contracting officer, and will include:

A3.2.2.1. Description/Characteristics:

A3.2.2.1.1. Manufacturer

A3.2.2.1.2. Model

A3.2.2.1.3. Number of same units

A3.2.2.1.4. Serial number(s)

A3.2.2.1.5. Laser medium

A3.2.2.1.6. Mode of operation (i.e., continuous wave (CW), single pulse, multiple pulses)

A3.2.2.1.7. Maximum exposure time (train length)

A3.2.2.1.8. Time (seconds) and wavelength

A3.2.2.1.9. Energy/pulse (Joules) or CW power (Watts)

A3.2.2.1.10. Pulse repetition frequency

A3.2.2.1.11. Pulse width

A3.2.2.1.12. Beam diameter (at 1/e point)

A3.2.2.1.13. Beam divergence (at 1/e point)

A3.2.2.2. This part of the AF contract describing work to be done at the installation and the inclusive dates of such work. Additional information required to be included: where the laser will be used (location, indoors, outdoors, enclosures, etc.), and the safety features of the device.

A3.2.2.3. Acknowledgement that the 60 AMW RSO can make initial and periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to AF personnel.

A3.3. Use of Electro-Magnetic Frequency Radiation (EMFR):

A3.3.1. Non-AF organizations required to use equipment generating EMFR in excess of 7 watts peak power and a frequency of 100 MHz or greater on Travis AFB property must

submit a written request for approval at least 30 calendar days before commencement of activities, which require the use of the Radio-Frequency (RF) generating device.

A3.3.2. Contractors must submit their requests to 60 AMDS/SGPB, building 791, (707) 423-5490, via the site RSOL, if applicable, with a courtesy copy to the contracting officer; and will include:

A3.3.2.1. Description/Characteristics:

A3.3.2.1.1. Description

A3.3.2.1.2. Nomenclature

A3.3.2.1.3. Location of emitters

A3.3.2.1.4. Quantity

A3.3.2.1.5. Frequency (MHz)

A3.3.2.1.6. Pulse width (microsecond.)

A3.3.2.1.7. Pulse repetition frequency. (pps)

A3.3.2.1.8. Peak power (kW)

A3.3.2.1.9. Antenna size (feet--horizontal/vertical)

A3.3.2.1.10. Antenna band width (degrees--horizontal/vertical)

A3.3.2.1.11. Antenna gain (dB)

A3.3.2.1.12. Scan rate (rpm)

A3.3.2.2. This part of the AF contract describing work to be done at the installation and the inclusive dates of such work. Additional information required to be included where the EMF generating device will be used (location, indoors, outdoors, enclosures, etc.), and the safety features of the device.

A3.3.2.3. Acknowledgement that the site RSOL and 60 AMW RSO can make initial and periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to AF personnel.

A3.4. Use of Ionizing Radiation-Generating Devices:

A3.4.1. Non-AF organizations required to use ionizing radiation-producing devices (for RAM, see Section 1) on Travis AFB must submit a written request for approval at least 30 calendar days before commencement of activities, which require the use of ionizing radiation-producing devices.

A3.4.2. Contractors must submit their request to 60 AMDS/SGPB, building 791, (707) 423-5490, with a courtesy copy to the contracting officer; and will include:

A3.4.2.1. Description/Characteristics:

A3.4.2.1.1. X-ray unit manufacturer

A3.4.2.1.2. Model number

A3.4.2.1.3. Serial number

A3.4.2.1.4. Maximum kVp, mA, Second

A3.4.2.1.5. Ionizing radiation source/emitter (electron tube)

A3.4.2.2. This part of the AF contract describing work to be done at the installation and the inclusive dates of such work. Additional information required to be included: where the ionizing radiation-producing device will be used (location, indoors, outdoors, enclosures, etc.), and the safety features of the device.

A3.4.2.3. Acknowledgement that the site RSOL and 60 AMW RSO can make initial and periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to AF personnel.

A3.5. Use of Ultraviolet (UV) Radiation-Producing Devices:

A3.5.1. Non-AF organizations required to use UV generating devices, including welders, on Travis AFB must submit a written request for approval at least 30 calendar days before commencement of activities, which require the use of UV generating devices.

A3.5.2. Contractors must submit their request to 60 AMDS/SGPB, building 791, (707) 423-5490, with a courtesy copy to the contracting officer; and will include:

A3.5.2.1. Description/Characteristics:

A3.5.2.1.1. Description

A3.5.2.1.2. Nomenclature

A3.5.2.1.3. Location

A3.5.2.1.4. Quantity

A3.5.2.1.5. Wavelength

A3.5.2.1.6. Effective Irradiance

A3.5.2.2. This part of the AF contract describing work to be done at the installation and the inclusive dates of such work. Additional information required to be included: where the UV generating device will be used (location, indoors, outdoors, enclosures, etc.), and the safety features of the device.

A3.5.2.3. Acknowledgement that the site RSOL and 60 AMW RSO can make initial and periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to AF personnel.

Attachment 4

BASIC RADIOACTIVE MATERIALS (RAM) SHIPPING PROCEDURES

A4.1. Each receiving or shipping agency must: Have a separate, marked, and locked enclosure for the receipt, handling, or shipment of radioactive packages. This separate area is to ensure personnel who are not familiar with the proper handling or RAM are not accidentally exposed to ionizing radiation. This location must be coordinated with the Travis Air Force Base (AFB) 60th Aerospace Medicine Squadron, Bioenvironmental Engineering Flight (60 AMDS/SGPB), building 791, (707) 423-5490.

A4.2. All RAM that is covered by a license or permit must: Be accounted for by a RAM transfer receipt, which is separate from any contractual, security, or other receipt documents. **Contract shipping and receiving agencies should obtain transfer receipts when items are dispensed to the Travis AFB organizations.**

A4.3. When RAM is received at or is to be shipped from Travis AFB: The 60 AMW Radiation Safety Officer (RSO) must be contacted by the receiving or shipping agency. The 60 AMW RSO or designated representative will monitor the container. **If the receiving or shipping agency is a contractor, the contractor is not required to notify the 60 AMW RSO. The contractor must perform all labeling, packaging, and monitoring requirements outlined in the federal law. NOTE:** In accordance with (IAW) 10 CFR 20.1906, all packages labeled with a Radioactive White I, Yellow II, or Yellow III, as specified Department of Transportation (DoT) regulations (49 CFR 172.403 and 172.436-440), must be monitored as soon as possible but not later than 3 hours after the package is received. If the package is received after normal duty hours, the package must be surveyed not later than 3 hours from the beginning of the next workday.

A4.3.1. If the RAM received is a sealed source, the most recent leak test results must accompany the package, and a copy of these results must be sent to the 60 AMW RSO. If this test does not accompany the sealed source, an individual approved by the 60 AMW RSO performs the leak test before the item is placed into use. Current leak test results must accompany sealed sources shipped from Travis AFB.

A4.3.2. Once the package has been monitored and cleared by an individual approved by the 60 AMW RSO, contact the user or custodian and transport the material directly to the user or custodian. If the user or custodian cannot be located, store the RAM until the user or custodian accepts receipt. **Note:** Only authorized personnel will open or package containers of RAM or items.

A4.4. If the RAM is to be transported from Travis AFB: Prepare for shipment and packaging per applicable Nuclear Regulatory Commission (NRC) and DoT regulations. Contact the 60 AMW RSO for assistance and shipping surveys.