

**BY ORDER OF THE
509TH BOMB WING COMMANDER**

WHITEMAN AIR BASE INSTRUCTION 40-201

1 MARCH 2013

Medical Command

RADIATION SAFETY PROGRAM



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This instruction implements Air Force Policy Directive (AFPD) 40-2, *Radioactive Materials (Non-Nuclear Weapons)* and provides guidance on procedures, precautionary measures, and responsibilities for the control of radioactive materials (RAM) and radiation-producing devices for the 509th Bomb Wing (509 BW) and tenants (all herein after known as 509 BW). It also gives guidance for the transportation, handling, storage, possession, and disposal of RAM and radiation-producing devices in the 509 BW, excluding disaster control operations. This instruction applies to all assigned, attached, and tenant units as well as contractors who possess, use, handle, or store sources of radiation within Whiteman Air Force Base (AFB). 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*. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records* and disposed of in accordance with the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afirms/afirms/>.

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1. Objective: This instruction describes the Radiation Safety and “As Low as Reasonably Achievable” (ALARA) Programs for the 509 BW. It requires control of RAM and instruments or radiation-producing devices to safeguard the health of military and civilian populations, while permitting maximum benefits from their use. The effectiveness of these programs depends on consistent and conscientious safety efforts of the material/device users.

2. Responsibilities.

2.1. The 509th Bomb Wing Commander (509 BW/CC):

2.1.1. In accordance with (IAW) Air Force Instruction (AFI) 40-201, *Managing Radioactive Materials in the US Air Force*, Air Force Manual (AFMAN) 48-125, *Personnel Ionizing Radiation Dosimetry*, AFI 48-148, *Ionizing Radiation Protection*, and Air Force Occupational Safety and Health Standard (AFOSHSTD) 48-9, *Electro-Magnetic Frequency (EMF) Radiation Occupational Health Program* and AFI 48-139, *Laser and Optical Radiation Protection Program*, the 509 BW/CC has designated qualified members of the 509th Medical Operations Squadron Bioenvironmental Engineering Flight (509 MDOS/SGOJ), as the 509 BW Radiation Safety Officers (RSOs) and Laser Safety Officers (LSOs) (both herein after known as 509 BW RSO).

2.2. The 509th Medical Group Commander (509 MDG/CC) will:

2.2.1. Provide the 509 BW RSO, 509 MDOS/SGOJ, Aerospace Medicine, and Optometry Clinics the resources and authority necessary to carry out provisions in this instruction.

2.2.2. Through the 509 BW RSO, advise Whiteman AFB and tenant unit commanders on radiological health and safety.

2.3. All 509 BW Group and Squadron (GP/SQ) Commanders will:

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

2.3.2. Appoint the following (for units and/or workplaces that use and/or possess RAM or radiation-producing devices):

2.3.2.1. 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 in AFI 40-201 and USAF Radioisotope Committee (RIC) policy and/or guidance.

2.3.2.2. Unit Laser Safety Officers (ULSO) for units using or possessing American National Standards Institute or ANSI Class 3B or 4 lasers.

2.3.2.3. Unit Device Officer (UDO) for generally licensed devices (GLDs) and or radiation-producing devices (i.e. X-rays, radiofrequency transmitters/receivers).

2.3.2.4. In the event a GSU is established, GSU commanders will appoint a radiation safety officer liaison (RSOL) for the site or installation. This individual should be someone with the most technical familiarity with radiofrequency, laser and ionizing radiation, and the applicable regulations. This person will act as a proxy on behalf of the 509 BW RSO, and refer certain matters back to the 509 BW RSO.

2.3.2.5. Unit PRSO, ULSO, UDO, and RSOLs will be the 509 BW RSO's single point of contact for their respective materials, devices, and instruments.

2.4. The 509 BW RSO will:

2.4.1. Initiate, supervise, and execute the 509 BW Radiation Safety Program IAW AFI 40-201, AFMAN 48-125, AFI 48-148, AFOSHSTD 48-9 and AFI 48-139.

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

2.4.3. Provide the following in support of the 509 BW Radiation Protection Program.

2.4.3.1. Manage the Thermoluminescent Dosimetry (TLD) Program IAW AFMAN 48-125.

2.4.3.2. Coordinate requests for radioactive waste disposal or recycling through the Air Force Radioactive Recycling and Disposal (AFRRAD) office (Wright-Patterson AFB OH).

2.4.4. Investigate the loss, theft, or spill of RAM, and all real or suspected overexposures to radiation IAW AFI 40-201, AFMAN 48-125, AFI 48-148, AFOSHSTD 48-9 and AFI 48-139.

2.4.4.1. In the event of contractor loss or release of RAM, and/or suspected overexposures to ionizing radiation from RAM, the 509 BW RSO will report to the USAF Radioisotope Committee (RIC) those portions of the incident that pertain to the USAF involvement.

2.4.4.2. The 509 BW RSO may recommend procedures to contractors through the contracting officer.

2.4.5. Be the sole authority for contacting HQ AFGSC/SG, USAF RIC, or the Nuclear Regulatory Commission regarding reportable events.

2.4.6. The 509 BW RSO may be appointed temporarily as PRSO only when the using organization has no one qualified. The 509 BW RSO can act as PRSO for the using organization for a period not to exceed 6 months.

2.5. The Unit RSOL, PRSO, ULSO, and UDO will:

2.5.1. Maintain and update an inventory of all RAM, lasers, GLDs, and radiation-producing devices, respectively, within the organization. The unit PRSO, ULSO, and/or UDO must contact the 509 BW RSO when changes occur.

2.5.2. The UDO will ensure workplaces using GLDs adhere to the provisions of 10 CFR 31.5, *Certain detecting, measuring, gauging, or controlling devices and certain devices for producing light or an ionized atmosphere*, and register the devices with the USAF RIC, through the 509 BW RSO.

2.5.3. Coordinate with the 509 BW RSO for assistance in developing unit radiation safety training and operating instructions (OIs).

2.5.4. Establish a unit training program IAW AFI 40-201, AFMAN 48-125, AFI 48-148 (RAM and ionizing radiation-producing devices), AFOSHSTD 48-9 and AFI 48-139. Document training on each member's AF Form 55, *Employee Safety and Health Record*, or equivalent.

2.5.5. PRSO will insure that conditions specified in USAF RIC permits are complied with.

2.6. 509th Civil Engineering Squadron Environmental Element (509 CES/CEAN) will:

2.6.1. Assist the 509 BW RSO with characterizing mixed wastes.

2.6.2. Direct requests for RAM disposal to 509 MDOS/SGOJ.

2.6.3. Dispose of and/or recycle RAM or waste after coordination with the 509 BW RSO.

2.7. 509th Medical Operations Squadron Aerospace Medicine (509 MDOS/SGOIQ) will:

2.7.1. Conduct pre-employment and termination medical examinations of civil service employees and Air Force personnel who may be routinely exposed to ionizing radiation.

2.7.2. Examine potentially exposed individuals as soon as practical.

2.7.3. Document all examinations in individual medical records.

2.8. 509th Medical Operations Squadron Public Health (509 MDOS/SGOIL) will:

2.8.1. Assist 509 BW RSO and coordinate medical examinations IAW AFI 40-201, AFMAN 48-125, AFI 48-148, AFOSHSTD 48-9 and AFI 48-139.

2.9. 509th Medical Operations Squadron Optometry (509 MDOS/SGOIO) will:

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

2.9.2. Document all examinations in individual medical records.

2.10. Workplace Supervisors will:

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

2.10.1.1. Ensure deviations are coordinated and approved by the 509 BW RSO.

2.10.1.2. Coordinate all new and revised OIs, pertaining to radiation safety, with the 509 BW RSO prior to publishing.

2.10.2. Conduct training IAW AFI 40-201, AFI 48-148, AFMAN 48-125, AFOSHSTD 48-9 and AFI 48-139.

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

2.10.4. Provide all necessary personal protection and safety equipment and ensure their proper use.

2.10.5. Inform the 509 BW RSO and unit RSO **immediately** of new radiation sources (i.e. RAM, GLDs) or radiation-producing devices (i.e. X-rays, GLD, lasers, EMF, etc.), or changes to existing sources to ensure all radiation hazards in the workplace are evaluated.

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

2.10.7. Refer declared pregnant females to Public Health for a pregnancy evaluation **immediately**.

2.10.8. Report any suspected or alleged overexposures **immediately** to the 509 BW RSO (see Chapter 3 and Chapter 4 respectively).

2.10.9. Notify the 509 BW RSO of unsafe work practices or hazardous conditions involving RAM or radiation-producing devices.

2.11. **Individuals/workers will:**

2.11.1. Comply with AFI 40-201, AFMAN 48-125, AFI 48-148, AFOSHSTD 48-9 and AFI 48-139.

2.11.2. Minimize personal exposure to radiation in accordance with 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).

2.11.3. Report incidents of suspected ionizing or non-ionizing radiation overexposures to the supervisor **immediately** (see Chapter 3 and Chapter 4).

2.11.4. Notify the 509 BW RSO of any off-duty, **non-Air Force** radiation work (i.e., in other employment), and provide monitoring results for inclusion in the Master Radiation Exposure Registry.

2.11.5. Individuals on the TLD Program will notify the 509 BW RSO before receiving medical diagnostic testing or treatment involving RAM.

2.11.6. Pregnant military females must declare their condition to their supervisor and Primary Care Manager upon becoming aware of pregnancy. Pregnant civilian females should declare their condition to their workplace supervisor.

2.11.7. Potentially exposed individuals will report to 509 MDOS/SGOIQ, building 2032, ext 687-1929, for examination as soon as practical.

2.12. 509th Civil Engineer Squadron Fire and Emergency Services (509 CES/CEF) will:

2.12.1. Ensure the location and characteristics of RAM used or stored on 509 BW installations are properly identified in fire planning and updated as notified by the RSO.

2.12.2. Ensure fire protection personnel are trained on the hazards associated with radiation sources.

2.12.3. Notify the 509 BW RSO and radiation source owner of fires in facilities with RAM.

2.13. 509th Civil Engineer Squadron Readiness and Emergency Management Flight (509 CES/CEX) will:

2.13.1. Design facilities, in conjunction with Civil Engineering, IAW AFI 48-148.

2.13.2. With guidance from the 509 BW RSO, conduct response operations IAW AFI 48-148.

2.14. 509th Contracting Squadron (509 CONS) will:

2.14.1. Include compliance with AFI 40-201 as a requirement in all contracts.

2.14.2. Obtain 509 BW RSO approval for contractor use of RAM on base, prior to use.

2.14.3. Obtain 509 BW RSO approval before allowing any base agency to purchase RAM.

2.15. 509 BW aircraft or AF display owners will:

2.15.1. Identify items and artifacts needing radiation surveys to Bioenvironmental Engineering (BE).

2.15.2. Maintain good condition of items and artifacts. Notify BE if condition deteriorates or is compromised.

2.16. 509th Logistics Readiness Squadron Packing and Crating or Transportation Management (509 LRS/LGRSDT) will:

2.16.1. Ensure packages are in compliance with 49 *CFR* 17 through 199, and AFD 24-2, *Preparation and Movement of Air Force Material*.

2.16.2. Call the BRSO to perform RAM surveys on all RAM packages.

3. Nonionizing Radiation:

3.1. Electro-Magnetic Frequency (EMF) Radiation.

3.1.1. Any incident in which personnel are suspected or potentially exposed to EMF radiation in excess of the permissible exposure level will be immediately reported to the

509 BW RSO and 509 MDOS/SGOJ, building 751, ext 687-4324. Exposure incidents that occur during non duty hours will be reported to the 509th Bomb Wing Command Post (509 BW/CP), ext 687-3778. The 509 BW/CP will notify 509 MDOS/SGOJ.

3.1.2. Potentially overexposed individuals will report to 509 MDOS/SGOIQ, building 2032, ext 687-1260, for examination as soon as practical. If the incident occurs during non duty hours, individuals will report to nearest emergency room.

3.1.3. Owing unit Commanders must coordinate modification and construction plans for facilities intended for use with operations involving EMF radiation with the 509 BW RSO.

3.2. Laser Radiation.

3.2.1. Incidents in which personnel suspect they have been exposed to laser radiation and complaint of persistent visual disturbances after working with lasers must be reported to the 509 BW RSO and 509 MDOS/SGOJ, building 751, ext 687-4324. After duty hours, call the 509 BW/CP, ext 687-3778. The 509 BW/CP will notify 509 MDOS/SGOJ.

3.2.2. The potentially exposed individuals will report to 509 MDOS/SGOIO, Building 959, ext 687-1065, for examination as soon as practical. Individuals with suspected skin exposure will also report to 509 MDOS/SGOIQ, building 2032, ext 687-1929, for examination as soon as practical. After duty hours, individuals will report to the nearest emergency room for medical assistance.

3.2.3. Owing unit Commanders must coordinate modification and construction plans for facilities intended for use with laser operations with the 509 BW RSO.

3.2.4. Personnel working with lasers classes 3B or 4 require pre-employment and termination eye examinations IAW AFI 48-139.

3.3. Ultraviolet (UV) Radiation:

3.3.1. Personnel will 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 specified in the most current American Conference of Governmental Industrial Hygienist Threshold Limit Values and Biological Exposure Indices booklet. BE will assist shop supervisors and personnel in identifying areas and conducting surveys where hazards may exist.

3.3.1.1. 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) and use sun block on exposed skin.

3.3.2. Incidents in which personnel suspect they have been occupationally exposed to UV radiation or complaints of persistent visual disturbances after working with UV, must seek medical assistance from 509 MDOS/SGOIQ (building 2032, ext 687-1929) and report the incident to the 509 BW RSO (building 751, ext 687-4324). Exposure incidents that occur during non-duty hours will be reported to the 509 BW/CP, ext 687-3778. The 509 BW/CP will notify 509 MDOS/SGOJ and 509 MDOS/SGOIQ. Individuals will report to the nearest hospital emergency room for medical assistance. **Exception:** Occupationally related sunburns will not be reported to the 509 BW RSO.

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

3.3.3. Coordinate modification and construction plans for facilities intended for use with UV radiation operations with the 509 BW RSO.

3.4. Non-Air Force organizations, including contractors/subcontractors, who desire to bring a non ionizing radiation source/device onto a 509 BW installation must follow the procedures in [Attachment 2](#).

4. Ionizing Radiation:

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

4.1.1. Local TLD investigation action levels (IAL) are established by the 509 BW RSO on the basis of dose histories in these workplaces. The 509 BW RSO investigates levels above the IAL IAW with AFMAN 48-125, AFI 48-148, and BE TLD standard operating procedures.

4.2. Personnel involved in radiological operations in the 509 BW 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, GLD, X-rays).

4.2.1. BE manages the TLD Program for civil service and USAF personnel at the 509 BW IAW AFMAN 48-125. Personnel enrolled in the TLD Program will receive TLD training from BE prior to performing radiation duties.

4.2.2. Upon initial assignment, personnel assigned to shops enrolled in the TLD Program must contact BE building 751, for enrollment in the program and issue of a TLD prior to beginning duties. Contractors are responsible for their own monitoring program. Air Force personnel are not authorized to wear contractors' monitoring devices, unless a suitable Air Force monitoring device accompanies the devices.

4.2.3. Personnel will wear and store their TLDs IAW guidelines provided by BE and AFMAN 48-125. Misuse or mishandling of TLDs (medical-legal documentation), intentional or otherwise, will be investigated.

4.3. 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 509 BW RSO (Reference: AFI 40-201 and AFI 48-148).

4.4. Any incident in which personnel are potentially exposed to ionizing radiation in excess of exposure limits must be immediately reported to the 509 BW RSO, 509 MDOS/SGOJ, building 115, ext 687-4324. Exposure incidents that occur during non duty hours will be reported to the 509 BW/CP, ext 687-3778. The 509 BW/CP will notify 509 MDOS/SGOJ.

4.4.1. 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 509 BW RSO. **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).

4.4.2. Within 5 working days from the date of the incident, the 509 BW RSO 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 509 BW RSO will communicate with HQ AFGSC/SG and the USAF RIC as necessary. **Note:** The USAF RIC makes all required notices to the Nuclear Regulatory Commission.

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

4.4.4. New or modified uses of RAM or ionizing radiation-producing devices must be reported to and approved by the 509 BW RSO.

4.5. Modifications and construction plans for facilities intended for use with operations involving ionizing radiation or RAM must be coordinated with the 509 BW RSO.

4.6. RAM.

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

4.6.2. GLDs will be handled IAW 10 CRF 31.5 and USAF RIC guidance.

4.6.3. The UDO must ensure all generally licensed devices are leak tested and inventoried IAW 10 CFR 31.5 or manufacturer's specifications, whichever is stricter.

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

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

5. Organizations acquiring/using RAM and/or radiation-producing devices through any contracting mechanism (e. g., US Army Corps of Engineers, SABER, GSU, Ops/Maint, contracts etc.) must:

5.1. Comply with AFI 40-201 requirements for non-Air Force use of RAM and radiation-producing devices.

5.1.1. Non-Air Force organizations must send written requests to the 509 BW 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 509 BW RSO. The request must include the information listed in [Attachment 2](#).

5.1.2. For contractors, these requirements must be included in the statement of work.

5.1.2.1. Contractors will not bring RAM onto the 509 BW installations without the written consent of the 509 BW RSO.

5.2. USAF RAM Permits.

5.2.1. The 509 BW RSO will determine if a permit or license is needed before anyone can possess or use RAM on 509 BW property.

5.2.2. The requestor must submit applications for permits through the 509 BW RSO. The requestor will prepare the application in accordance with AFI 40-201.

5.2.3. Organizations desiring to renew an expiring RAM Permit should contact the 509 BW 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.

5.2.4. 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 509 BW RSO for assistance with transfer, termination, or disposal.

6. RAM Receipt or Shipment:

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

6.2. Shipping and receiving procedures are summarized in [Attachment 3](#).

6.3. The 509 BW RSO will provide instructions and assistance as needed. At GSUs, this information will flow through the RSOL.

7. RAM Storage:

7.1. Keep all RAM in a RAM storage area or a locked enclosure separate from other items to insure personnel 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.

7.2. A storage area from which RAM has been permanently removed must be surveyed by qualified individual approved by the 509 BW RSO. Written clearance must be received before the area may be used for other purposes.

8. RAM Movement on the 509 BW:

8.1. 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 509 BW RSO if you plan to move RAM.

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

8.1.2. Vehicles will require the appropriate DoT placards.

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

9. RAM Disposition:

9.1. 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.

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

THOMAS A. BUSSIERE, Brigadier General, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

- 10 CFR 20, *Standards for protection against radiation*
- 10 CFR 31.5, *Certain detecting, measuring, gauging or controlling devices and certain devices for producing light or an ionized atmosphere*
- 10 CFR 71, *Packaging and transportation of radioactive material*
- 49 CFR, *Transportation*
- AFI 40-201, *Managing Radioactive Materials in the US Air Force*, 16 March 2011
- AFI 48-148, *Ionizing Radiation Protection*, 21 September 2011
- AFMAN 33-363, *Management of Records*, 01 March 2008
- AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*, 04 October 2011
- AFOSHSTD 48-9, *Radio Frequency Radiation (RFR) Safety Program*, 14 December 2011
- AFI 48-139, *Laser and Optical Radiation Protection Program*, 25 July 2012
- AFPD 24-2, *Preparation and Movement of Air Force Material*, 27 April 2011
- AFPD 40-2, *Radioactive Materials (Non-Nuclear Weapons)*, 15 March 2007

Prescribed Forms

No Forms Prescribed

Adopted Forms

- AF Form 55, *Employee Safety and Health Record*
- AF Form 847, *Recommendation for Change of Publication*
- NRC Form 241, *Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters*

Abbreviations and Acronyms

- 509 BW**—509th Bomb Wing
- 509 BW/CC**—509th Bomb Wing Commander
- 509 BWCP**—509th Bomb Wing Command Post
- 509 CES/CEAN**—509th Civil Engineering Squadron Environmental Element
- 509 CES/CEF**—509th Civil Engineer Squadron Fire and Emergency Services
- 509 CES/CEX**—509th Civil Engineer Squadron Readiness Flight
- 509 CONS**—509th Contracting Squadron
- 509 LRS/LGRSDT**—509th Logistics Readiness Squadron Packing and Crating or Transportation Management

509 MDG/CC—509th Medical Group Commander

509 MDOS/SGOIL—509th Medical Operations Squadron Public Health

509 MODS/SGOIO—509th Medical Operations Squadron Optometry

509 MDOS/SGOIQ—509th Medical Operations Squadron Aerospace Medicine

509 MDOS/SGOJ—509th Medical Operations Squadron Bioenvironmental Engineering

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

DOE—Department of Energy

DOT—Department of Transportation

EMF—Electro-Magnetic Frequency

GLD—Generally Licensed Devices

GSU—Geographically Separated Units

HQ AFMOA/SGOR—

HQ AFSPC/SG—Headquarters Air Force Global Strike Command Surgeon General Office

IAL—Investigation Action Level

IAW—In Accordance With

IBIS—Inflight Blade Inspection System

LSO—Laser Safety Officers

OI—Operating Instruction

OPR—Office Primary Responsibility

PRSO—Permit Radiation Safety Officer

RAM—Radioactive Materials

RIC—Radioisotope Committee

RDS—Records Disposition Schedule

RSO—Radiation Safety Officer

RSOL—Radiation Safety Officer Liaison

SOP—Standard Operating Procedures

TLD—Thermoluminescent Dosimeter

UDO—Unit Device Officer

ULSO—Unit Laser Safety Officer

USAF—United States Air Force

UV—Ultraviolet

Terms

509 BW Radiation Safety Officer: Focal point for radiation safety on 509 BW and appointed in writing by the 509 BW/CC. Must meet requirements specified in AFI 40—201.

As Low As Reasonably Achievable (ALARA) Concept:—Air Force philosophy for working with ionizing radiation and 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.

Unit Device Officer (UDO): Organization focal point for generally licensed devices and radiation—producing devices appointed in writing by the unit commander. Must meet requirements specified in AFI 48-148, 10 CFR 31.5, AFI 40-201, AFI 48-139, and AFOSHSTD 48-9.

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.

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 Permit.

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

RAM Permit: A permit issued by the USAF Radioisotope Committee (HQ AFMSA/SG3PB) IAW AFI 40—201 regulating the possession, use, maintenance, and disposal of non-exempted instruments or items containing RAM (for USAF agencies). For non-USAF agencies, a permit issued by the Nuclear Regulatory Commission 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 509 MDOS/SGOJ to monitor personal exposure to ionizing radiation in certain jobs identified as having an exposure risk by the 509 BW RSO.

Attachment 2

NON-AIR FORCE USE OF RADIATION SOURCES APPLICATION REQUIREMENTS

A2.1. Use of RAM:

A2.1.1. AFI 40-201, sets USAF policy for using RAM. It applies to all civilians, civilian contractors, Department of Defense, Department of Energy (DoE), and DOE prime contractor personnel bringing RAM onto Air Force installations.

A2.1.2. Non-Air Force organizations that bring RAM onto USAF installations, or conduct operations involving RAM on USAF installations, must obtain the approval in writing of the installation commander or his designee. To obtain this approval, the contractor must forward an application to the 509 BW RSO, 509 MDOS/SGOJ, building 115,205 Vandenberg Ave., Whiteman AFB MO 65305, (660) 687-4324, with a courtesy copy to the contracting officer at least 30 calendar days before the planned date for commencement of activities on the installation. Contractors operating at 509 BW GSUs will forward the following requirements to the 509 BW RSO via the site RSOL:

A2.1.2.1. A description of the proposed activities on NRC Form 241, *Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters*.

A2.1.2.2. The procedures established to ensure radiological health and safety of Air Force personnel and the public while on Air Force installations; the name, local address, and telephone number for the responsible local representative; and the name, address, and telephone number of the RSO named on their license.

A2.1.2.3. A 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.

A2.1.2.4. The part of the Air Force contract describing work to be done at the installation and the inclusive dates of such work.

A2.1.2.5. An acknowledgement that the GSU RSOL or 509 BW RSO can make periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to Air Force personnel and prevent potential contamination of government property. The RSOL or 509 BW RSO must identify deficiencies to the contracting officer for corrective actions. In addition, the RSOL and 509 BW RSO have authority to suspend contractor operations believed to be unsafe.

A2.1.2.6. Copies of the most recent leak test results (not over 180 days old) for sealed sources.

A2.1.2.7. Copies of training certificates for authorized users.

A2.2. Contractors will adhere to 10 CFR and 49 CFR sections pertaining to transportation of RAM.

A2.3. Contractors must notify the GSU RSOL or 509 BW RSO the day and time RAM arrives on installation, and the day and time the RAM is removed from the installation.

A2.4. Use of Lasers:

A2.4.1. Non-Air Force organizations required to use Classes 3B or 4 lasers on 509 BW property must submit a written request for approval at least 30 calendar days before commencement of activities, which require the use of a laser.

A2.4.2. Contractors must submit their request to 509 MDOS/SGOJ, building 751, 1051 Vandenberg Ave, Whiteman AFB MO 65305, (660) 687-4324, with a courtesy copy to the contracting officer, and will include:

A2.4.2.1. Description/Characteristics:

A2.4.2.1.1. Manufacturer.

A2.4.2.1.2. Model.

A2.4.2.1.3. Number of same units.

A2.4.2.1.4. Serial numbers.

A2.4.2.1.5. Laser medium.

A2.4.2.1.6. Mode of operation (i.e. continuous wave (CW), single pulse, multiple pulse).

A2.4.2.1.7. Maximum exposure time (train length).

A2.4.2.1.8. Time (sec) & wavelength.

A2.4.2.1.9. Energy/pulse (J) or CW power (W).

A2.4.2.1.10. Pulse repetition frequency.

A2.4.2.1.11. Pulse width.

A2.4.2.1.12. Beam diameter (at 1/e point).

A2.4.2.1.13. Beam divergence (at 1/e point).

A2.4.2.2. The part of the Air Force 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.

A2.4.2.3. An acknowledgement that the 509 BW RSO can make initial and periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to Air Force personnel.

A2.5. Use of Electro-Magnetic Frequency (EMF) Radiation:

A2.5.1. Non-Air Force organizations required to use equipment generating EMF radiation in excess of 7 watts peak power and a frequency of 100 MHz or greater on 509 BW property

must submit a written request for approval at least 30 calendar days before commencement of activities, which require the use of the EMF generating device.

A2.5.2. Contractors must submit their requests to 509 MDOS/SGOJ, building 751, 1051 Vandenberg Ave, Whiteman AFB MO 65305, (660) 687-4324, via the site RSOL, if applicable, with a courtesy copy to the contracting officer; and will include:

A2.5.2.1. Description/Characteristics:

A2.5.2.1.1. Description.

A2.5.2.1.2. Nomenclature.

A2.5.2.1.3. Location of emitters.

A2.5.2.1.4. Quantity.

A2.5.2.1.5. Frequency (MHz).

A2.5.2.1.6. Pulse width (microsecond).

A2.5.2.1.7. Pulse repetition freq. (pps).

A2.5.2.1.8. Peak power (kW).

A2.5.2.1.9. Antenna size (feet--horizontal/vertical).

A2.5.2.1.10. Antenna band width (degrees--horizontal/vertical).

A2.5.2.1.11. Antenna gain (dB).

A2.5.2.1.12. Scan rate (rpm).

A2.5.2.2. The part of the Air Force 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.

A2.5.2.3. An acknowledgement that the site RSOL and 509 BW RSO can make initial and periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to Air Force personnel.

A2.6. Use of Ionizing Radiation Generating Devices:

A2.6.1. Non-Air Force organizations required to use ionizing radiation-producing devices (for RAM, see Section A2.1) on Whiteman 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.

A2.6.2. Contractors must submit their request to 509 MDOS/SGOJ, 1051 Vandenberg Ave, Whiteman AFB, MO 65305, (660) 687-4324, with a courtesy copy to the contracting officer; and will include:

A2.6.2.1. Description/Characteristics:

A2.6.2.1.1. X-ray unit manufacturer.

A2.6.2.1.2. Model number.

A2.6.2.1.3. Serial number.

A2.6.2.1.4. Maximum kVp, mA, Sec

A2.6.2.1.5. Ionizing radiation source/emitter (electron tube).

A2.6.2.2. The part of the Air Force 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.

A2.6.2.3. An acknowledgement that the site RSOL and 509 BW RSO can make initial and periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to Air Force personnel.

A2.7. Use of Ultraviolet (UV) Radiation-Producing Devices:

A2.7.1. Non-Air Force organizations required to use UV generating devices, including welders, on Whiteman 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.

A2.7.2. Contractors must submit their request to 509 MDOS/SGOJ, 1051 Vandenberg Ave, Whiteman AFB, MO 65305, (660) 687-4324, with a courtesy copy to the contracting officer; and will include:

A2.7.2.1. Description/Characteristics:

A2.7.2.1.1. Description.

A2.7.2.1.2. Nomenclature.

A2.7.2.1.3. Location of devices.

A2.7.2.1.4. Quantity.

A2.7.2.1.5. Wavelength.

A2.7.2.1.6. Effective Irradiance.

A2.7.2.2. The part of the Air Force 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.

A2.7.2.3. An acknowledgement that the site RSOL and 509 BW RSO can make initial and periodic checks to ensure the contractor is following applicable radiological health and safety practices, which prevent unnecessary exposures to Air Force personnel.

Attachment 3

BASIC RAM SHIPPING PROCEDURES

A3.1. 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 not familiar with the proper RAM handling are not accidentally exposed to ionizing radiation. This location must be coordinated with the 509 BW RSO.

A3.2. All RAM that are 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 509 BW organizations.**

A3.3. When RAM is received at, or is to be shipped from, the 509 BW, the 509 BW RSO must be contacted by the receiving or shipping agency. The 509 BW RSO or designated representative will monitor the container. **Contractors must notify in advance the 509 BW RSO of any shipping, receiving and/or movement of any RAM at Whiteman AFB. Contractors must perform all labeling, packaging, and monitoring requirements outlined in the federal law for their RAM. Note:** In accordance with 10 CFR 20.1906, all packages labeled with a Radioactive White I, Yellow II, or Yellow III, as specified 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.

A3.3.1. 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 509 BW RSO. If this test does not accompany the sealed source, an individual approved by the 509 BW RSO performs the leak test before the item is placed into use. Current leak test results must accompany sealed sources shipped from the 509 BW.

A3.3.2. Once the package has been monitored and cleared by the 509 BW 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 RAM-containing items.

A3.4. If the RAM is to be transported from the 509 BW, prepare for shipment and packaging per applicable NRC and Department of Transportation regulations. Contact the 509 BW RSO for assistance and shipping surveys.