

Item 5. Radioactive Material.

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| Element/Mass Number: | Americium 241 | Nickel 63 | Nickel 63 |
| Chemical/Physical: Form: | Americium Oxide foil | Nickel Metal plated on a brass cylinder | Nickel metal plated on a brass cylinder |
| NRC Source/Device: Registration Number | NR-155-D-118-S | NR-0155-D-119-S | NR-155-D-125-S |
| Device Nomenclature | M43A1 Chemical Agent Detector CAD | Chemical Agent Monitor(CAM) Improved CAM (ICAM) | GID-/M22 Automatic Chemical Agent Alarm (ACADA) |
| Source Model Number | AMM 5 or NRD A-001 | NER-004 or NBCCD | NBC/NBCD/NBCQ8 681 |
| Number of sources | 1 | 1 | 2 Per device |
| Maximum Activity Per Source/device | 300 microcuries | 15 millicuries | 15 millicuries/30 millicuries per dev |
| Maximum possession limit | 25 curies | 375 curies | 900 curies |

Item 6. Purpose For Which Licensed Material Will Be Used.

Early detection, recognition and decontamination are crucial in the defense of a chemical attack, either on the battlefield or in response to a terrorist attack. The following complement of detection devices is used for area warning, and personnel, equipment, and surface monitoring in the event of such an attack.

1. The M43A1 Chemical Agent Detector (CAD) is a portable device used as a battlefield warning system for the detection and alarm in the presence of nerve and blister agent. It provides an audible alarm and is used outdoors, placed at the perimeter of an occupied area or specially mounted on or in a vehicle. It may also be operated indoors, during maintenance or training, with the use of a filter affixed to the outlet port of the device. The Am 241 source is located in the cell module of the detector and is designed to preclude direct contact with the source by operators or personnel servicing the device.

2. The Chemical Agent Monitor (CAM) and the Improved Chemical Agent Monitor (ICAM) are hand held, individually operated devices used following a chemical attack to monitor for contamination on personnel, equipment and surfaces. The CAM/ICAM detects and discriminates between mustard and nerve agent vapors. The Nickel 63 source is located in the Ion Mobility Spectrometry (IM3) cell of the device and is designed so that maintenance can be performed without access to the source.

3. The GID-3/M22 Automatic Chemical Agent Alarm (ACADA) is a portable device used as a battlefield warning system for detection and alarm in the presence of nerve and blister agent. This device provides an audible and visual alarm and is placed at the perimeter of an occupied area or specially mounted on or, in a vehicle and operated within shelters. The ACADA contains two (2) Nickel 63 sources located in the Ion Mobility Spectrometry (IMS) cells. The IMS contains the cell assembly and drift tube module and is designed so that neither the operator nor direct support level maintenance personnel have access to the source.

The devices described in this license are used by the U.S. Army, Active and Reserve, and National Guard on Department of Defense (DoD) installations and temporary job and field sites throughout the United States and the world. The licensee will approve depot maintenance locations responsible for the repair of these devices beyond the level of checks and services in connection with the operations of the device. Bulk storage locations at Pine Bluff Arsenal, Pine Bluff, Arkansas, Rock Island Arsenal, Rock Island, Illinois and Blue Grass Army Depot, Richmond, Kentucky, are authorized for storage and distribution of these devices. An additional storage and distribution location at Anniston Army Depot, Anniston, Alabama is authorized by the Defense Logistics Agency, which maintains NRC License No. 37-30062-12 issued by NRC Region I.

Item 7. Individuals Responsible For Radiation Safety Protection Program And Their Training And Experience.

1. The radiation safety program is administered under the technical supervision of the Tank Automotive Command (TACOM-RI) health physicist. Mr. Thomas G. Gizicki is designated as the Radiation Safety Officer (RSO).

2. The duty of the License RSO is to serve as a focal point for the administration and implementation of the license program. The RSO is responsible for oversight of the license and implementation of the radiation protection program as authorized by the license and performs the following:

a. Coordinates incident response, providing documentation and reporting to the USNRC.

b. Provides input into the development and utilization of inventory tracking.

c. Facilitates development of training and conduct of that training at camps, posts, and installations worldwide.

d. Provides information, guidance, and instructions to installation Radiation Safety Officers (RSO) for the implementation of the radiation safety program at that level.

e. Provides onsite assistance to the installation RSO for general radiation safety information relevant to license compliance and incident response.

3. Radiation Safety Officers (RSO) at camps, posts, and installations are responsible for the local radiation protection program and implements the local program by performing the following:

a. Maintaining current inventories of licensed radioactive material authorized by this license.

b. Maintaining records supporting the radiation protection program.

c. Performing or causing area surveys and leak tests to be performed.

d. Assuring that individuals have completed the appropriate level of radiation safety training.

e. Assuring that areas are appropriately posted in accordance with regulatory requirements.

f. Ensuring transportation of licensed radioactive materials is completed in accordance with the appropriate radiation safety protocols.

g. Assuring that radioactive waste is collected, stored and disposed of in accordance with regulatory requirements.

h. Responding to accidents/incidents involving licensed radioactive material, documenting and reporting to the license RSO pertinent information required for regulatory notification.

Item 8. Training For Individuals Working In Or Frequenting Restricted Areas.

Training requirements for individuals working in or frequenting restricted areas where radioactive material authorized under this license are provided as follows:

1. User/Maintainer level.

a. Individual User.

Users of TACOM-RI radioactive commodities are those individuals who place in operation or operate devices containing radioactive sources. The individual user is authorized possession, use and performance of operational checks and services only. Individual users of TACOM-RI radioactive commodities will receive initial radiation safety training that includes safe handling procedures, biological effects of exposure to radiation and emergency procedures. Refresher training will be required annually. Unit commanders will be responsible for ensuring that the appropriate training is conducted and documented. Training records will be available for inspection by the installation RSO and the licensee.

b. Direct Support (DS) Maintenance Support.

(1) Maintenance Personnel are responsible for the repair of TACOM-RI radioactive commodities beyond the level of performing checks and services in connection with operation of the device. Maintenance personnel will receive initial radiation safety training that includes safe handling procedures, survey procedures, the specific hazards of radioactive material in the devices maintained, leak test and emergency procedures.

(2) Soldiers will be trained in the above radiation safety subjects and authorized maintenance procedures through the U.S. Army Ordnance Electronic Maintenance Training Department (OEMTD) at Fort Gordon, Georgia. This training includes radiation safety as part of the occupational specialty training for special electronics repairmen.

(3) Soldiers who have not attended the U.S. Army OEMTD may be temporarily assigned to a position where they perform maintenance on radioactive commodities. They may do so if they receive on the job training (OJT), which includes radiation safety training, and instruction in authorized maintenance procedures as described above.

(4) Shop supervisors or senior maintenance personnel who have received occupational specialty training through the U.S. Army OEMTD or by OJT, in addition to supervised experience, may provide OJT for authorized maintenance tasks. The unit commander will ensure that radiation safety training is included in this training. The radiation safety training may also be provided through the installation RSO.

(5) Government civilian and contractor personnel who have received OJT, or other equivalent training in authorized maintenance tasks, and radiation safety training as described above may perform maintenance on radioactive commodities.

(6) A job proficiency evaluation, completed and documented prior to starting work, is acceptable as proof of training. Job evaluations will be required annually after assuming duties. Records of maintenance personnel training and/or job evaluations will be maintained by the maintenance shop supervisor/commander and be available for inspection by the installation RSO and the licensee.

(7) Calibration personnel at U.S. Army Test Measurement and Diagnostic Equipment (TMDE) Activity Calibration laboratories may perform maintenance provided they have completed the TMDE radiation safety training program and have been trained in authorized maintenance procedures.

2. Installation RSO.

The installation RSO is required to complete formal training prior to assuming the duties as an RSO. Radiation safety training will include hazards and biological effects of isotopes in the commodities located at the installation; emergency procedures; detection and measurement of radioactivity; calculations based on measurements; and good radiation program practices for storage, monitoring, decontamination, and disposal. Radiation Safety Officer courses offered by the following schools are acceptable as qualification for an installation RSO:

- a. The U.S. Army Chemical School, Ft. Leonard Wood, MO.
- b. The U.S. Army Health Service Academy, Ft. Sam Houston, TX
- c. U.S. Navy RSO Training, Yorktown, VA or other services that meet the requirements of Regulatory Guide 10.4.

Other civilian or military sources that demonstrate, by curriculum, that they meet the requirements of this license will be reviewed and authorized by the licensee.

3. Depot Level.

a. Maintenance Support Personnel.

The depot RSO provides at least 8 hours of training to maintenance personnel prior to assuming duties. The subject matter will be similar to that required for OS maintenance personnel above. Four (4) hours of refresher training will be completed every 2 years and will include:

- (1) Hazards of the radioactive material they will be working with.
- (2) Emergency and notification procedures.
- (3) Safe working techniques and proper use of protective equipment.
- (4) Proper transportation procedures.

b. Depot RSO.

The Depot RSO should have formal training prior to assuming duties as a depot RSO. Training courses not identified in paragraph 1.c. above will be evaluated and approved by the licensee. Training will include:

- (1) Principles and practices of radiation protection.
- (2) Radioactivity measurement standardization, monitoring techniques, and instrumentation.
- (3) Mathematics and calculations basic to the use and measurement of radioactivity.
- (4) Biological effects of radiation.

Item 9. Facilities and Equipment.

The devices described in this license are used by the U.S. Army, Active and Reserve, and National Guard on Department of Defense (DoD) installations and temporary job and field sites throughout the United States and the world. Depot level maintenance locations responsible for the repair of these devices beyond the level of checks and services in connection with the operations of the device will be approved by the licensee and adhere to guidance provided in the following paragraphs for the management of those facilities. Bulk storage locations at Pine Bluff Arsenal, Pine Bluff, Arkansas, Rock Island Arsenal, Rock Island, Illinois and Blue Grass Army Depot, Richmond, Kentucky, are authorized for storage and distribution of these devices. An additional storage and distribution location at Anniston Army Depot, Anniston, Alabama is authorized by the Defense Logistics Agency which maintains NRC License No. 37-30062-12 issued by NRC Region I.

1. Security and Control:

Military equipment containing radioactive material will be stored securely to guard against unauthorized removal or access. Storage areas will be located in an area free from the danger of flood and outside the danger radius of flammable materials and explosives. When removed from storage licensed radioactive material will be safeguarded against loss, theft or damage. The following additional storage requirements apply to depot level maintenance and bulk storage locations:

a. Depot Level Maintenance facilities will store radioactive materials in rooms, buildings, or caged areas designated for storage of radioactive materials. There is no limit to the number of like commodities that may be stored in each storage area. The storage areas will be located in an area free from the danger of flood and outside the danger radius of flammable materials and explosives.

b. Bulk storage areas that have been specifically approved by the licensee are authorized to store bulk quantities of TACOM-RI radioactive commodities. There is no limit to the number of like commodities that may be stored in each storage area. The storage areas will be located in an area free from the danger of flood and outside the danger radius of flammable materials and explosives.

2. Required Postings:

a. The 10 CFR 20 1903(c) exempts posting of caution signs on any rooms or areas where sealed sources are present when the radiation level does not exceed .005 rem per hour at 30 centimeters from the surface of the source. Since the radioactive material and devices covered by this license do not exceed that level, areas will not be required to be posted with caution signs, unless, personnel, or their representatives, request that such postings be applied as enhanced safety notification.

b. The following will be posted in a location near the area frequently used by operators, maintenance workers and near storage areas.

(1) NRC Form 3

(2) Signs stating "No eating, drinking, or smoking"

Note: In lieu of posting the following documents, a notice may be posted with the NRC Form 3 that describes the documents and where they may be examined

(3) Copies of 10 CFR Parts 19 and 20

(4) Copy of the TACOM-RI NRC License

(5) Energy Reorganization Act

3. Area Surveys:

Area surveys will be conducted in maintenance and storage areas as follows:

a. Maintenance area wipe tests and instrument surveys will be performed monthly.

b. Removable contamination levels for maintenance and storage areas will be evaluated in accordance with "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material", USNRC, April 1993.

4. Radiation Detection Instruments.

a. DS Maintenance facilities will have appropriate alpha and beta/gamma survey instruments available for use. Area wipe test analyses will be performed at the installation, if available, or at a laboratory licensed by the NRC and as approved by the licensee.

b. Calibration

(1) Instruments are calibrated in accordance with procedures outlined in Technical Bulletin 750-25, Maintenance of Supplies and Equipment - Army Test, Measurement and Diagnostic Equipment and Technical Bulletin 9-6655-285-15, Army Calibration Program for RADIAC Meters. Calibration will be performed at intervals not to exceed one-year using standards traceable to the National Institutes of Standards and Technology.

(2) Laboratory counting equipment used to evaluate wipe tests will be calibrated in accordance with the manufacturer's instructions.

Item 10. Radiation Safety Program.

1. The U.S. Army, TACOM-RI is responsible for management and support of all radioactive commodities covered by this license. Responsibilities include license and radiation protection program management functions performed by the TACOM-RI radiation safety staff. The installation RSO provides general oversight of the radiation protection program at the installation level and assists in the implementation of license requirements. The commodities covered by this application are issued to U.S. Army, Active and Reserve and National Guard units at locations worldwide.

a. Management: The TACOM-RI radiation safety staff is assisted in executing the radiation safety program for its NRC license by supply management specialists, equipment specialists, engineers and procurement personnel assigned to the management of the various commodities.

b. Radiation Safety Inspection Program. The TACOM-RI radiation safety staff conducts a regular program of license compliance inspections at depots, posts, camps and installations where commodities are used, stored and/or maintained under this license. The inspection program cycle is once every five years for each installation. TACOM-RI also relies on the inspections completed by other U.S. Army Materiel Command radioactive commodity license holders and internal Army audit programs conducted by the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM), Aberdeen Proving Ground, Maryland and the U.S. Army Communications and Electronics Command (CECOM), Ft. Monmouth, New Jersey for U.S. Army National Guard activities. These inspections and audits include U.S. Army, Reserve, and National Guard sites. Audit reports are provided to TACOM-RI for use in monitoring the radiation protection program and initiating corrective actions when necessary.

c. The TACOM-RI Radiation Safety Program will be reviewed at least annually in accordance with 10 CFR 20.1101.

2. Radiation Safety Supervision.

a. Commanders of installations that receive, store, ship, use, transport, maintain and/or dispose of material covered under this license are responsible for appointing a properly trained RSO and for assuring compliance with the provisions of this program at the installation. Applicable technical manuals, officially issued supplementary technical instructions, safety of use messages and ground precautionary messages will be followed for the use and maintenance of these devices.

b. The installation RSO at user locations and depots acts as the licensee's representative ensuring that license conditions are fulfilled at the site where the material is located. The task of the RSO at every depot, installation, Reserve Region or State National Guard Organization is to ensure the safe handling, storage and maintenance of commodities containing radioactive sources. In addition the installation RSO is responsible for the following:

(1) Inventory:

Ensures that a current annual inventory of radioactive commodities is available at the installation. Annual inventories, as part of the Army asset database accessible to the licensee, will be used to produce an annual report specific to each installation and will be used to reconcile inventories during inspections and audits.

(2) Training:

Ensures that radiation safety training for individuals working with licensed radioactive material is completed, and appropriately documented with documentation maintained and available for inspection by the licensee.

(3) Incident Response and Reporting:

(a) The installation RSO responds to incidents and or accidents involving potential release or loss of licensed material at that location. This includes ensuring that any release is identified and contained; those potentially exposed individuals are identified and steps to determine any doses are initiated. When loss of licensed materials is suspected, the installation RSO coordinates immediate efforts to recover the material using resources from the installation.

(b) The installation RSO reports loss or theft to the TACOM-RI RSO and to the installation's higher Army Headquarters in accordance with the requirements of 10 CFR 20.2201 and 30.50 in the following sequence:

(1) User/Maintainer

(2) Installation/Depot Radiation Safety Officer

(3) Concurrently to the following:

(i) Installation/Depot Commander and Major Subordinate Command Radiation Safety Officer

(ii) TACOM-RI Radiation Safety Officer

(4) The TACOM-RI RSO reports incidents to the NRC Region I Operations Center in accordance with the requirements of 10 CFR 20.1501.

(4) Surveys:

The installation RSO insures that regular inspections and routine radiation monitoring are conducted at the installation and properly documented. Frequency of surveys and area wipe tests is described in Item 9 of this application.

(5) Records:

Radiation safety records for surveys, leak tests, inventories, calibration and training are maintained in accordance with the requirements of 10 CFR 20.2103.

(6) Leak Testing:

(a) Annual leak testing is required for devices containing Am-241 and Ni63. Local commanders are responsible for ensuring that leak testing requirements are established in SOPs and are completed for licensed items within their command.

Specific leak test procedures for each device are provided and updated by the use of technical manuals, officially issued supplementary technical instructions, safety of use messages or ground precautionary messages. Properly trained maintenance personnel, as specified in item 8, will perform leak testing. Completion of this requirement will be enforced through inspection.

(b) Only laboratories appropriately licensed by the NRC or an agreement state and approved by the licensee will perform leak testing analysis services.

(c) Leak Test Action Levels. The following action levels for removable contamination will apply:

Am 241 - 20 dpm/100 cml\2 Ni 63 -1000 dpm/100 cml\2

Leak test results equal to or greater than the action levels stated above will be reported to the licensee. The licensee will provide instructions for further evaluation of the device, shipment and/or transfer of the device to a maintenance facility, or for its disposal. Leak test results will be maintained by the laboratory performing the analysis.

(7) SOP's:

RSO's at locations where maintenance is performed (OS & Depot) ensure that Standard Operating Procedures (SOP's) are developed which implement installation regulations, ensure compliance with license requirements, and provide a safe operating environment.

(8) Radioactive Waste:

The Installation RSO will accept, store and maintain a current inventory of unwanted radioactive materials. The RSO will request disposition instructions for the unwanted radioactive materials from the Department of Defense Executive Agency for Low Level Radioactive Waste (located at the U.S. Army Industrial Operations Command, Rock Island, Illinois) who will manage the transportation and disposal.

3. Maintenance Concepts:

a. User/Support Level: Support level maintenance will be performed in a designated controlled work area. Work surfaces in DS maintenance areas on which radioactive devices are repaired shall be covered to protect them from contamination. The covering shall be replaced at least once per month and/or when it is torn, damaged, or a when a leaking device is reported by the laboratory. The used material will be bagged and labeled as low level radioactive waste.

The installation RSO will store the material in a designated radioactive waste holding area until it can be properly disposed of. If no leakage of radioactivity has occurred, ie. wipe tests of devices have been within acceptable levels, the material may be disposed of as normal trash.

b. Depot Maintenance Level: Depot maintenance will be performed in a designated controlled work area. Work surfaces in Depot maintenance areas on which radioactive devices are repaired shall be covered to protect them from contamination. The covering shall be replaced at least once per month and/or when it is torn, damaged, or when a leaking device is reported by the laboratory. The used material will be bagged and labeled as radioactive material. The installation RSO will store the material in a designated radioactive waste holding area until it can be properly disposed of. If wipe test results of devices have been within acceptable levels, the material may be disposed of as normal trash.

c. Posting, Equipment and Instrumentation requirements are described in Item 9.

4. Surveys:

The installations shall perform appropriate surveys to ensure removable contamination levels are maintained as low as reasonably achievable (ALARA). Work surfaces where radioactive devices are repaired shall be covered to protect from contamination.

a. The DS maintenance work areas will be surveyed with appropriate alpha or beta/gamma survey meters and wipe tests quarterly and/or when the work surface covering is torn, damaged, or replaced because a device has been reported as contaminated by the laboratory. The used covering will be packaged and labeled as radioactive material and stored by the installation RSO until it can be properly disposed of.

b. Records of area surveys will include the date of survey, name of surveyor, identification of the instrument used, area survey readings and wipe test results. These records are maintained for a minimum of 3 years per 10 CFR 20.2103.

c. Equipment and/or facilities released to unrestricted use are decontaminated to 1000 dpm/100 cm² in accordance with the criteria stated in Regulatory Guide 1.86 "Termination of Operating Licenses for Nuclear Reactors" June 1974, Table 1 and "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source or Special Nuclear Material" USNRC, April 1993.

(1) Am 241: In the event that wipe tests results exceed the limits of 20 dpm/100 cm² the installation RSO will notify the TACOM-RI RSO and decontaminate the area. If removable levels are elevated above background but do not exceed the limits the installation RSO will decontaminate the area and document the event.

(2) Ni 63: In the event that wipe test results exceed the limits of 1000 dpm/100 cm² the installation RSO will notify the TACOM-RI RSO and decontaminate the area. If removable levels are elevated above background but do not exceed the limits above the installation RSO will decontaminate the area and document the event.

d. Equipment/facilities released for unrestricted use are decontaminated to 1000 dpm/100 cm².

5. Transportation:

Shipments of radioactive materials will be made in accordance with the requirements of 49 CFR Part 173. Incoming packages containing radioactive material are surveyed in accordance with 10 CFR 20.1906. Damaged packages will be inspected by the installation RSO.

6. Dosimetry:

The commodities covered by this license do not constitute external radiation hazards, therefore, no external dosimetry program is established.

7. Radioactive Waste:

The Department of Defense Executive Agency for Low Level Radioactive Waste (located at Rock Island, Illinois) is the central manager for disposal of all DOD low level radioactive waste generated by the Joint Services and other Federal Agencies. The Executive Agency ensures the radioactive waste generated under the license issued for this application is packaged shipped and disposed of in accordance with current Army, NRC and DOT regulations and disposal facility criteria through:

a. Compliance with Joint Munitions Command transportation procedures for unwanted radioactive materials.

b. On-site management of removal actions

c. Detailed instructions to installations making shipments.

8. Decommissioning. The Army will ensure all radioactive commodities have been removed prior to base closure or license termination. The latest NRC unrestricted area release criteria will be applied.

9. Emergency Preparedness. In accordance with the criteria set forth in 10 CFR 30.32(i)(1)(i), the quantity of radioactive material at the typical bulk storage facility would not require the establishment of a formal emergency plan for responding to a release.

However, emergency response personnel are available to respond to emergency situations (e.g., medical, fire, hazardous material, etc.).

Item 11. Waste Management

The Department of Defense Executive Agency for Low Level Radioactive Waste (located at the U.S. Army Joint Munitions Command located at Rock Island, IL) is the program manager for disposal of 000 low level radioactive waste generated by the Joint Services and other Federal Agencies. As the program manager, the Executive Agency issues instructions to military users for the proper packaging and marking of shipments and conducts on-site audits of shipments to insure compliance with Army, NRC and DOT regulations and disposal facility criteria.

Unwanted devices will be identified for disposal, stored and packaged in accordance with instructions provided by the Executive Agency for Low Level Radioactive Waste Disposal and the appropriate Army, NRC, and DOT regulations.