

Logistics

# **Management of Equipment Contaminated with Depleted Uranium or Radioactive Commodities**

Headquarters  
Department of the Army  
Washington, DC  
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**UNCLASSIFIED**

# ***SUMMARY of CHANGE***

AR 700-48

Management of Equipment Contaminated with Depleted Uranium or Radioactive Commodities

This revision, dated 16 September 2002--

- o Updates office symbols throughout.
- o Removes the obsolete publication, AR 385-11.
- o Adds technical reference TB 43-0137.

This new Department of the Army regulation, dated 3 December 1999--

- o Establishes formal Army policy and procedures for handling equipment determined to be contaminated with depleted uranium or radioactive commodities.
- o Delineates actions as a result of combat and non-combat situations.
- o Prescribes guidance for handling foreign equipment that may be contaminated.
- o Establishes the Army Contaminated Equipment Retrograde Team (ACERT).

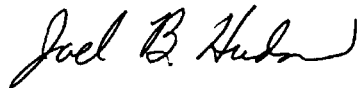
## Logistics

# Management of Equipment Contaminated with Depleted Uranium or Radioactive Commodities

**By Order of the Secretary of the Army:**

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*General, United States Army*  
*Chief of Staff*

Official:



JOEL B. HUDSON  
*Administrative Assistant to the*  
*Secretary of the Army*

**History.** This is an administrative revision of this publication. The portions of the publication affected by this revision are highlighted on the summary of change page.

**Summary.** This regulation prescribes policy and procedures for the management of equipment contaminated with Depleted Uranium or radioactive commodities. Handling procedures for contaminated equipment are prescribed in DA Pamphlet 700-48.

**Applicability.** This regulation applies to Department of the Army (DA) commands,

installations, and activities. This includes the U.S. Army Reserve (USAR) and the Army National Guard of the United States (ARNGUS). This regulation remains applicable to DA personnel deployed to either humanitarian or peacekeeping missions where the degree of readiness to respond to hostile fire requires the availability of radioactive commodities, such as depleted uranium, as a contingency.

**Proponent and exception authority.** The proponent of this regulation is the Deputy Chief of Staff, G-4. The Deputy Chief of Staff, G-4, has authority to approve exceptions to this regulation that are consistent with controlling law and regulation. The Deputy Chief of Staff, G-4, may delegate this approval authority, in writing, to a division chief within the proponent agency in the grade of colonel or the civilian equivalent.

**Army management control process.** This regulation does not contain management control provisions.

**Supplementation.** Supplementation of this regulation and establishment of command or local form are prohibited without

prior approval from Headquarters, Department of the Army (HQDA) (DALO-SMR), Washington, DC 20310-0500.

**Suggested Improvements.** Users are invited to send comments and suggested improvements to this regulation. Internet users can send comments and suggested improvements through the electronic Department of the Army DA Form 2028 (Recommended Changes to Publications and Blank Forms) found within the Deputy Chief of Staff, G-4, regulations and pamphlets. Anyone without Internet access should submit comments and suggested improvements on DA Form 2028 directly to the Director, U.S. Army Logistics Integration Agency, ATTN: LOIA-AP, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001.

**Distribution.** This publication is available in electronic media only and is intended for command level B for Active Army, Army National Guard, and U.S. Army Reserve.

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\*This regulation supercedes AR 700-48, 3 December 1999.

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### **Glossary**

# Chapter 1 Introduction

## Section I Background

### 1-1. Purpose

This regulation—

- a.* Establishes the policies, responsibilities, and procedures for the proper management of—
  - (1) Damaged equipment containing depleted uranium or radioactive commodities.
  - (2) Any equipment contaminated by depleted uranium or radioactive commodities.
- b.* In addition, provide commanders guidance on how these procedures may be modified consistent with operational risk and risk management principles per FM 101-5.

### 1-2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

### 1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary.

### 1-4. Policy

*a.* It is DA policy to always ensure that radiation exposures are as low as is reasonably achievable (ALARA). In general, commanders at all levels should take prudent measures to keep exposures to all personnel ALARA that are consistent with the operational risks. An integral part of ALARA is consideration of the risk caused by implementing a protective procedure. Personnel protective measures designed for use in a non-combat environment may not be appropriate during military operations. The risk management process (see para 2-2) should be used to formulate proper protective measures during military operations.

*b.* The policies in this regulation are designed to provide a framework for the commanders to make the risk management decisions required to safely process and use radiologically contaminated equipment (RCE) in the full spectrum of military operations. The overall operational commander is responsible for risk management to include the risk from radiation exposure to RCE.

### 1-5. Scope

*a.* The guidance contained within this document provides guidelines for OCONUS war and OCONUS operations other than war. In OCONUS situations host nation agreements may also apply.

*b.* This regulation applies to the entire range of military operations for RCE, which includes:

(1) Contamination from Depleted Uranium (DU) munitions (combat vehicles damaged by DU fire or combat vehicles containing DU armor that have been damaged in any way).

(2) Equipment contaminated as a result of the use or damage of DA-controlled radioactive commodities, such as those identified in the DA Technical Bulletin (TB) 43-0116, containing—

*(a)* Tritium (h-3), for example, the M1A1 Collimator.

*(b)* Americium-241 (Am-241), for example, the M43A1 detector unit.

*(c)* Nickel-63 (NI-63), for example, the CAM and ICAM chemical agent monitors, and the M88 ACADA detector unit.

*(d)* Thorium-232 (Th-232), for example, the M21 RSCAAL stand-off detector and the AN/PVS-2 night vision sight.

*(e)* Cesium-137 (Cs-137), for example, the MC-1 moisture and density tester.

*(f)* Strontium-90 (SR-90), for example, the AN/UDM-2 RADIAC calibrator.

*(g)* Plutonium-239 (Pu-239), for example, the AN/UDM-6 RADIAC calibrator.

*(h)* Krypton-85 (Kr-85), for example, the AN/PDR-27 RADIAC radiological detector.

*(i)* Radium-226 (Ra-226), for example, the AN/GRC-106 radio set.

(3) Foreign Equipment suspected to contain or to have been contaminated with similar radioactive sources as above.

*c.* This regulation does not apply to equipment contaminated by sources such as:

(1) Radiation dispersal weapons.

(2) Fallout from nuclear weapons/detonations.

(3) Nuclear reactor accidents.

(4) Nuclear weapons accidents.

(5) Nuclear reactor fuel rods.

## **1-6. Deviations**

*a.* Authorized deviations to Army standards and procedures are allowed. Deviations from Federal and DOD regulations and standards are not authorized.

*b.* The following personnel may authorize deviations from Army standards and procedures.

(1) Each MACOM commanding general.

(2) The Superintendent, U.S. Military Academy.

(3) The Chief, National Guard Bureau (NGB). (The Chief, NGB may further delegate deviation authority to the State Adjutant Generals.)

(4) Unified Commanders of U.S. forces.

*c.* Only personnel listed in paragraph b above may approve residual risk levels deemed to be too high or extremely high. Authority to accept residual risk will be IAW FM 101-5. For the purpose of this regulation, the personnel listed in para b are considered MACOM commanding generals.

*d.* Deviations may be approved for periods of one year or less. The respective approval authority may approve deviation renewals provided conditions cited in the original deviation remain the same.

*e.* Any accident or mishap occurring under an approved deviation will cause automatic termination of the approval until the respective approving authority completes an investigation and revalidates the deviation.

*f.* Where the conditions cited in past requests for deviation are expected to remain the same, or to reoccur with regularity, action should be taken to address these conditions in revisions to the approved Army standards and procedures.

## **Section II Responsibilities**

### **1-7. Responsibilities**

*a.* The Assistant Secretary of the Army Manpower and Reserve Affairs (ASA M&RA) will—

(1) Establish the overall policy for medical concerns.

(2) Establish and promulgate operation exposure guidance for peacetime and wartime conditions.

*b.* The Assistant Secretary of the Army Installations and Environment (ASA I&E) will establish the occupational health and environmental policy for supporting industrial facilities and installations.

*c.* The Headquarters, Department of the Army (HQDA), Office of the Deputy Chief of Staff (DCS), G-4, will promulgate DA policy for processing RCE.

*d.* The HQDA, Office of the DCS, G-3, will promulgate operational procedures for processing RCE.

*e.* The HQDA, Director of Army Safety (DASAF) will establish Army Radiation Safety Protection Policy and oversee the Army Radiation Safety Protection Program.

*f.* The HQDA, Office of The Surgeon General (OTSG) will—

(1) Formulate medical surveillance policies with regard to personnel exposures to radioactive commodities and radioactive contamination.

(2) Formulate policy governing exposures to radioactive commodities which includes the requirements for medical surveillance.

(3) Provide guidance to the HQDA Staff and Major Army Commanders regarding emergency medical care procedures, exposure assessments, treatment protocols, medical surveillance (dose records), and the medical management of personnel who have been exposed to radioactive and/or mixed waste.

(4) Provide Nuclear Medical Science Officers (AOC 72A), Health Physics Specialists (MOS 91SN4), and other personnel as needed to provide field support to monitor U.S. Army Contaminated Equipment Retrograde Team (ACERT) and U.S. Army Radiological Control (RADCON) Team health risks and to perform other duties consistent with performing health risk assessments, personnel/equipment monitoring, and the medical treatment missions of the Army Medical Department.

*g.* The Commanders of Major Army Commands (MACOMS) will—

(1) Provide adequate resources to procure, use, transport, handle, store, maintain, repair, decontaminate, and dispose of RCE in a safe and compliant manner.

(2) Ensure that all personnel receive RCE hazard awareness training as necessary. Additional selected personnel involved in retrograde operations will be trained in battle damage assessment, repair, recovery and retrograde procedures, and/or operational planning, training and implementation procedures as prepared and disseminated by the U.S. Army Training and Doctrine Command (TRADOC).

(3) Furnish Explosive Ordnance Disposal (EOD) personnel to handle known or suspected RCE ammunition and explosives.

*h.* The Commander, U.S. Army Materiel Command (AMC) will—

(1) Dispense information (appropriate Nuclear Regulatory Commission license information, technical bulletins, manuals, policies, and maintenance procedures) through AMC major subordinate commands concerning characteristics,

risks, and proper handling of RCE and that such information is included as part of their commodity fielding plans and logistics assistance operations.

(2) Deploy personnel to:

(a) Furnish soldiers, commanders, and staffs with the most current safety-of-use messages, material management policies, radioactive commodity requirements, and guidelines for handling depleted uranium items and other radiological items.

(b) Provide on-site assistance to units as needed.

(3) Ensure that adequate Radiation Detection, Indication, and Computation (RADIAC) systems are developed and fielded to identify RCE hazards.

(4) Establish policies regarding transportation and handling, maintenance, use, retrograde, decontamination, demilitarization, and disposal for all contaminated equipment.

(5) Establish and manage the US Army Contaminated Equipment Retrograde Team. The ACERT will be responsible for providing onsite technical and packaging assistance IAW all applicable federal, state, and international standards during the retrograde of RCE. See DA PAM 700-48, Appendix F for a description of the ACERT.

(6) When required, utilize the RADCON Team to assist in the management of RCE, that requires radiological surveys and characterizations.

(7) If requested by the Supported CINC, AMC may deploy the ACERT to act at theater level, assisting in the processing of RCE.

(8) Provide guidance for the proper storage and handling of RCE at storage/staging areas located in theater.

(9) Operate a designated facility that is responsible for the decontamination of equipment destined for depot rebuild or which could not be decontaminated in theater.

(10) As needed, process foreign captured equipment to ensure the proper disposition of any radioactive sources that may remain on them.

(11) Prioritize reclamation and repair of RCE held at the designated reclamation point.

(12) Ensure the proper storage and handling of affected equipment at AMC storage/staging areas located throughout the retrograde process.

(13) Coordinate all efforts with the NRC licensee of the material.

(14) Provide personnel monitoring devices and services to DA, DLA, and DA contractors.

*i.* The Commander, U.S. Army Medical Command (MEDCOM) will—

(1) Provide radiological hygiene services that include bioassay, medical surveillance, health risk assessment, and medical treatment as required to the commanders.

(2) Assist in the development of procedure methodologies for the ACERT.

(3) When required utilize the U.S. Army Radiological Advisory Medical Team (RAMT) to assist in the medical monitoring of personnel engaged in retrograde of RCE. See DA PAM 700-48 appendix H for a description of the RAMT.

*j.* The Commander, U.S. Army Training and Doctrine Command (TRADOC) will develop and update RCE hazard awareness training. Training will cover the characteristics, risks, and proper handling of radioactive and hazardous materials and include:

(1) A general awareness program to be provided to all soldiers entering and currently in the U.S. Army that are not in a specific Military Occupational Specialty.

(2) Specific training to students in the following TRADOC schools whose Military Occupational Specialty or Area of Concentration may involve RCE: Armor, Chemical, Engineer, Infantry, Ordnance (including Battle Damage Assessment and Repair), Quartermaster, Signal, Transportation, and Medical. The above list is not all-inclusive. The intent is that all personnel who operate, maintain and/or recover the RCE will be trained to the degree necessary for safe operations and compliance with this regulation.

(3) Detailed hazard awareness training and instruction on procedures described in DA PAM 700-48 to personnel who possess, store, or use licensed commodity materials as part of their MOS/AOC.

*k.* The Commander, Military Traffic Management Command (MTMC) will ship materiel subject to this regulation IAW with all applicable Federal, state, international transportation standards and NRC license requirements.

*l.* The Commander, Transportation Movement Control Agency (TMCA) will command and control all transportation units (Movement Control Battalions and Movement Teams) to coordinate and control all movements of RCE. The TMCA will ensure that RCE is handled within guidelines of the 'special movement policy and procedures' and appropriate publications. Monitoring of the sensitive freight will continue to ensure arrival at the final destination.

*m.* The Area Commander (TAACOM) will—

(1) Ensure their Radiation Safety Officer (RSO) provides guidance to commanders on matters concerning radiation, DU, and radioactive commodities. This person may be a Nuclear Medical Science Officer (AOC 72A67C) on the Surgeon's Staff, a trained Chemical Corps Officer (AOC 74A) on the Commander's staff, or a GS-1306 trained civilian employee. The RSO should coordinate with the Nuclear, Biological, and Chemical (NBC) staff in the Chain of Command.

(2) Establish separate collection and storage points located in theater for damaged and contaminated material awaiting assessment, cleanup, or evacuation.

(3) Transport RCE from the local collection points to the theater operated collection points IAW guidance provided by the ACERT.

(4) Ensure all efforts to notify the NRC licensee is made by the G4.

*n.* The Corps/Joint Task Force (JTF)/Division Commanders will—

(1) Appoint a Radiation Safety Officer (RSO) to provide guidance to commanders on matters concerning radiation, DU, and radioactive commodities. This person may be a Nuclear Medical Science Officer (AOC 72A67C) on the Surgeon's Staff, a trained Chemical Corps Officer (AOC 74A) on Corps/JTF/Division Staff, or a GS-1306 trained civilian employee. The RSO should coordinate with the NBC staff in the Chain of Command.

(2) Process contaminated equipment and materials IAW this regulation, TB 9-1300-278, DA PAM 700-48, and Operational Exposure Guidance (OEG).

(3) Ensure all efforts to notify the NRC licensee is made by the General's Staff Logistics Officer (G4).

*o.* The Commanders of Support Battalions and Maintenance Companies that maintain radioactive commodities will—

(1) Establish unit level RCE collection points.

(2) Accept RCE from other units, on request.

(3) Retain radioactive equipment that is damaged and potentially contaminated in the RCE collection point. Potentially contaminated equipment will not normally be returned to the originating unit for disposal.

(4) Report the RCE inventory to the TAACOM RSO.

(5) Establish and promulgate operational exposure guidance for peacetime and wartime conditions.

(6) Coordinate with the TAACOM RSO for the retrograde of the RCE, and with the NRC licensee, if possible.

(7) Ensure that personnel handling radioactive commodities receive recurring training in the proper methods for handling RCE.

(8) Ensure the proper final disposition of all RCE in their control IAW Army policy and procedures.

## **Chapter 2**

### **Radiologically Contaminated Equipment Management**

#### **2-1. General**

*a.* The US Army will comply with the all applicable federal, state, and host nation laws (including status of forces agreements), NRC license regulations and policies regarding radioactive materials and contaminated equipment, and applicable Army regulations.

*b.* The Commander for the deployment/operation will assume responsibility for risk management based upon the Commander-in-Chief's (CINC's) assessment of the risks posed by the operation and the guidance and policies in this regulation.

*c.* Emergency medical considerations outweigh radiological contamination concerns. The health and safety of the individual is the primary concern. The condition of injured personnel should be assessed and stabilized prior to considering any decontamination operations.

*d.* In general, commanders at all levels should take prudent measures to keep radiation exposures to all personnel as low as is reasonably achievable that are consistent with the operational risks.

#### **2-2. Risk Management**

The risk management process per FM 101-5 will be utilized by commanders throughout the entire retrograde process to ensure that the needs for mission accomplishment, safety of personnel, and proper handling of the contaminated equipment are balanced. This should include:

*a.* Health Risk Assessments to the degree applicable to the operational environment.

*b.* Safety Risk Assessments in conjunction with Mission, Enemy Terrain, Troops, Time (METT-T) and civilian considerations.

*c.* Guidance in this regulation and DA PAM 700-48.

#### **2-3. Training**

*a.* Personnel handling radioactive commodities as a part of their duties will receive the basic training required for personal safety and hazard awareness.

*b.* Recovery and maintenance personnel will receive training in retrograde procedures for radioactive contamination and material for all systems they will be required to recover, repair, or maintain.



c. Training will be conducted on an annual or as needed basis.

## **2-4. Handling of RCE**

### *a. General.*

(1) During peacetime or as soon as operational risk permits, the Corps/JTF/Division Commander's RSO will identify, segregate, isolate, secure, and label all RCE. Procedures to minimize the spread of radioactivity will be implemented as soon as possible.

(2) Radiologically contaminated equipment does not prevent the use of a combat vehicle or equipment for a combat mission.

(3) RSO must consider the operational situation, mission, level of contamination, and types of contaminate when evaluating the need to utilize contaminated equipment.

(4) After the Corps Commander certifies the equipment is decontaminated IAW established OEG or peacetime regulations, it may be reutilized.

(5) The equipment for release for unrestricted use must be decontaminated to comply with peacetime regulations versus OEG.

(6) Explosives Ordnance Disposal (EOD) Units will render equipment safe prior to retrograde operations when appropriate.

### *b. Use and cannibalization.*

(1) The operation of RCE or cannibalization is prohibited unless the commander has determined that:

(a) The operational risk is comparable to that found in combat.

(b) The equipment is required for mission completion.

(c) Under no condition shall the following items be used or cannibalized if damaged: MC-1 Soil Moisture Density Tester (Soil and Asphalt) (NSN 6635-01-030-6896), or commercially procured TROXLER Surface Moisture-Density Gauge AN/UDM-2 RADIAC Calibrator Set (NSN 6665-00-179-9037), AN/UDM-6 RADIAC Calibrator Set (NSN 6665-00-767-7497).

(2) Under those circumstances in which the commander has waived prohibitive use (see para 2-4b(1)) and determined that the operational risk is comparable to combat, equipment may be decontaminated and used for a specified mission. Once the circumstances are met, operational necessity is over, that waived contaminated equipment will be handled IAW peacetime procedures.

### *c. Handling.*

(1) The unit/team/individual responsible for the equipment, whether friendly or foreign, at the time of damage or contamination is responsible for taking all action consistent with this regulation and DA PAM 700-48.

(2) The MACOM commander may designate a radioactive waste/commodity processing facility. The ACERT, RADCON and RAMT Teams may be deployed to assist in the processing and management supervision of RCE.

(3) Maintenance forms, warning tags, and other forms of communication will be used to ensure that personnel involved in the reclamation are aware of the contamination status.

(4) In peacetime, RCE will be transported to the command esignated location for receipt of radioactive material where the extent of contamination can be assessed and remediated under controlled conditions.

(5) In peacetime, the Corps/JTF/Division Commander's RSO monitor the separation of RCE from uncontaminated equipment. The separation must be maintained throughout the entire handling process.

(6) All equipment, to include captured or combat RCE, will be surveyed, packaged, retrograded, decontaminated and released IAW Technical Bulletin 9-1300-278, DA PAM 700-48 and other relevant guidance.

(7) Equipment will be decontaminated to the maximum extent as far forward in theater as possible, IAW the OEG. Under all other conditions, decontamination in-theater will be performed only in accordance with guidance from the ACERT/RADCON/Chemical Officer/NBC Staff.

*d. Personal Safety.* Personnel handling contaminated equipment need to follow the personal safety measures outlined in DA PAM 700-48 and AR 40-5.

### *e. Disposal.*

(1) In general, environmental impact must be considered prior to equipment retrograde. Retrograde operations must minimize the spread of contamination preventing further harm to personnel and damage to equipment.

(2) Radioactive material and waste will not be locally disposed of through burial, submersion, incineration, destruction in place, or abandonment without approval from overall MACOM commander. If local disposal is approved, the responsible MACOM commander must document the general nature of the disposed material and the exact location of the disposal. As soon as possible the MACOM commander must forward all corresponding documentation to the Chief, Health Physicist, AMCSF-P, HQAMC.

(3) Demilitarization in the field is authorized only as a means to ensure that the equipment will not fall into enemy hands.

## **2-5. Medical Surveillance**

*a.* The MACOM commander has the responsibility for determining the likelihood of significant exposure from contaminated equipment to any individual. Individuals that the command determines may have been exposed will be sent to a medical treatment facility for appropriate screening (i.e., individuals did not follow the personal protective measures outlined in DA PAM 700-48 and AR 40-5 or any of the recommended handling procedures as outlined in the relevant regulations and technical manuals).

*b.* Medical personnel will perform the appropriate medical monitoring, which may include bioassay.

*c.* Medical documentation of RCE exposed personnel is mandatory, use form SF 600 (Chronological Record of Medical Care).

## **Appendix A References**

### **Section I Required Publications**

#### **DA Pam 700-48**

Handling Procedures for Equipment Contaminated with Depleted Uranium or Radioactive Commodities. (Cited in paras 1-7h(5), 1-7i(3), 1-7j(3), 1-7n(2), 2-2c, 2-4c(1), 2-4c(6), 2-4d, 2-5a.)

#### **FM 101-5**

Staff Organizations and Operations. (Cited in paras 1-1, 1-6c, 2-2)

#### **TB 9-1300-278**

Guidelines for Safe Response to Handling, Storage, and Transportation Accidents Involving Army Tank Munitions or Armor which Contain Depleted Uranium. (Cited in paras 1-7n(2), 2-4C(6))

### **Section II Related Publications**

#### **AR 11-34**

The Army Respiratory Protection Program

#### **AR 40-5**

Preventive Medicine

#### **AR 40-13**

Medical Support-Nuclear/Chemical Accidents and Incidents

#### **AR 385-40**

Accident Reporting and Records

#### **AR 750-1**

Army Material Maintenance Policy and Retail Maintenance Operations

#### **DA Pam 40-18**

Personnel Dosimetry Guidance and Dose Recording Procedures for Personnel Occupationally Exposed to Ionizing Radiation

#### **DA Pam 700-48**

Handling Procedures for Equipment Contaminated with Depleted Uranium or Radioactive Commodities

#### **FM 3-3-1**

Nuclear Contamination Avoidance

#### **FM 3-4**

NBC Protection

#### **FM 3-5**

NBC Decontamination

#### **FM 8-9**

NATO Handbook on the Medical Aspects of NBC Defense Operations

#### **FM 9-43-2**

Recovery and Battlefield Damage Assessment and Repair

#### **FM 21-10**

Field Hygiene and Sanitation

**TB 11-6665-227-12**

Safe Handling, Storage, and Transportation of Calibrator Set, RADIAC, AN/UDM-2

**TB 43-0116**

Identification of Radioactive Items in the Army

**TB 43-0137**

Transportation for U.S. Army Radioactive Commodities

**TB 43-0216**

Safety and Hazard Warnings for Operation and Maintenance of TACOM Equipment

**TM 3-261**

Handling and Disposal of Unwanted Radioactive Material

**TM 55-315**

Transportation Guidance for Safe Transport of Radioactive Materials

**TM 3-6665-312-12&P**

Operator's and Organizational Maintenance Manual including Repair Parts and Special Tools List for M8A1 Automatic Chemical Agent Alarm

**TM 3-6665-312-30&P**

Intermediate Direct Support Maintenance Manual (including Repair Parts and Special Tools List) for M8A1 Automatic Chemical Agent Alarm)

**TM 3-6665-331-10**

Operator's Manual for the Chemical Agent Monitor (CAM)

**TM 3-6665-331-23&P**

Unit and Direct Support Maintenance Manual (including Repair Parts and Special Tools List) for the Chemical Agent Monitor (CAM)

**TM 5-6635-386-12&P**

Unit Maintenance Manual for Tester, Density and Moisture (Soil and Asphalt), Nuclear Method (Campbell-Pacific Model MC-1)

**TM 11-6665-227-12**

Operator's and Organizational Maintenance Manual for Calibrator Set, RADIAC, AN/UDM-2

**TM 11-6665-24810**

Operator's Manual for Calibrator, RADIAC, AN/UDM-6

**Technical Report (TR) 94-11**

U.S. Army CECOM, Tritium Commodities

**Allied Command Europe (ACE) Directive No. 80-63**

Policy for Defensive Measures against Radiological Hazards during Peacekeeping Operations

**Foreign Science and Technology Center (FSTC) Guidebook AST-1500Z-100-93**

Radiation Protection Officer's Guidebook, Identification Guide for Radioactive Sources in Foreign Material

**DODI 6055.8**

Occupational Radiation Protection Program

**Title 10, Code of Federal Regulations (CFR)**

Energy (NRC Regulations)

**Title 40, CFR**

Environmental Protection Agency Regulations

**Title 49, CFR**

Transportation Regulations

**U.S. Army Industrial Operations Command, AMSIO–DMW, Standing Operating Procedure MAY 97,**  
Shipping Procedures for Unwanted Radioactive Materials

**U.S. Army Industrial Operations Command Pamphlet 385–1**  
Handling of Unwanted Radioactive Material

**Section III**

**Prescribed Forms**

This section contains no entries.

**Section IV**

**Referenced Forms**

**SF Form 600**

Chronological Record of Medical Care

## **Glossary**

### **Section I Abbreviations**

#### **AIRDC**

U.S. Army Ionizing Dosimetry Center

#### **ALARA**

As Low As Is Reasonably Achievable

#### **ACERT**

Army Contaminated Equipment Retrograde Team

#### **AMC**

Army Materiel Command

#### **BDAR**

Battlefield Damage Assessment and Repair

#### **CONUS**

Continental United States

#### **CTT**

Common Task Training

#### **DB**

Double Bagging

#### **DS/GS**

Direct Support/General Support

#### **DU**

Depleted Uranium

#### **EOD**

Explosive Ordnance Disposal

#### **FSTC**

Foreign Science and Technology Center

#### **FORSCOM**

U.S. Army Forces Command

#### **CG**

Commanding General

#### **IAW**

In Accordance With

#### **IOC**

Industrial Operations Command

#### **IHO**

Industrial Hygiene Officer

#### **IMA**

Installation Medical Authority

#### **JTF**

Joint Task Force

**LAR/LAO**

Logistics Assistance Representative/Logistics Assistance Officer

**LLRW**

Low-Level Radioactive Waste (Radioactive Waste)

**LRPO**

Local Radiation Protection Officer

**MACOM**

Major Army Command

**METT-T**

Mission, Enemy, Terrain, Troops, Time

**MOPP**

Mission-Oriented Protective Posture

**NBC**

Nuclear, Biological, and Chemical

**NRC**

Nuclear Regulatory Commission

**OEG**

Operational Exposure Guidance

**OSC**

On-Scene Commander

**OOTW**

Operations Other Than War

**PPE**

Personnel Protective Equipment

**QASAS**

Quality Assurance Specialist Ammunition Surveillance

**RADCON**

Army Radiological Control Team

**RADIAC**

Radiation Detection, Indication, And Computation

**RAMT**

Army Radiological Advisory Medical Team

**RCE**

Radiologically Contaminated Equipment

**RCO**

Radiation Control Officer

**RPO**

Radiation Protection Officer

**RPSO**

Radiation Protection Staff Officer

**RSO**

Radiation Safety Officer

**SITREP**

Situation Report

**SOP**

Standing Operating Procedures

**TI**

Technical Inspection

**TMDE**

Test, Measurement, and Diagnostic Equipment

**WRAMC**

Walter Reed Army Medical Center

**Section II****Terms****As Low As Is Reasonably Achievable**

The principle of making every reasonable effort to maintain exposures to radiation as far below the dose limits in Part 20 of Title 10 of the Code of Federal Regulations as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the benefits to the public health and safety, and other societal, socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

**Decontamination**

The process by which radioactive and/or mixed waste materials are removed from materiel.

**Depleted Uranium**

A by-product of the uranium fuel enrichment process. As a result, this by-product or waste stream contains lower concentrations (depleted) of the U-234/U-235 radioisotopes than was contained in the original natural uranium ore.

**Double Bagging**

The process of taking the necessary steps to contain the radioactive material to decrease the chance of radiological contamination spreading. On the bag mark the following information: date, time, location of bagging, suspected isotope, suspected activity of the isotope, and the names of all personnel involved with the material. Small materials that are radiologically contaminated may require the materials be placed into a plastic bag, or similar type container, and then that plastic bag be placed into another plastic bag with proper tagging. Larger radiological contaminated materials, i.e. vehicles, tanks, will need to be contained by wrapping the entire vehicle. Plastic wrap, traps, shrink wrap or any other material may be used that will encompass the entire vehicle so that the spread of contamination is minimized to the fullest extent possible.

**Foreign items**

All encompassing term for the weapon system's equipment, apparatus, documents, and supplies of a foreign military force or non-military organization.

**Free release**

Decontaminated materiel released for unrestricted use by the general public.

**Health physics**

The science of determining, evaluating, and controlling the health effects of exposure to ionizing radiation.

**Host nation**

A nation in which representatives or organizations of another state are present because of government invitation and/or international agreement.



**Host nation support**

Civil and/or military assistance rendered by a nation for foreign forces within its territory during peacetime, crises or emergencies, or war based on agreements mutually concluded between nations.

**Industrial Hygiene Officer**

The individual designated by the commander as chief advisor and responsible party for all matters related to mixed waste within an individual command.

**Low-Level Radioactive Waste (Radioactive Waste)**

Unwanted solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act as amended, falls below the threshold for activity and quantity listed in 10 CFR 62.2, and is of negligible economic value considering the cost of recovery.

**Material**

Equipment, vehicles, and other commodities to include supply items.

**Mission-Oriented Protective Posture**

Protective clothing and equipment used to operate in an NBC contaminated combat environment.

**Mixed waste**

Hazardous waste as defined by the U.S. Environmental Protection Agency in combination with LLRW.

**Operational Exposure Guidance**

Instructions from the Commander as to the allowable radiation exposures for soldiers in a certain operation or situation, with respect to radiation dose levels and/or radioactive contamination. The OEG will be determined in consultation with the Command Surgeon.

**Radiation safety**

For the purposes of this regulation, a scientific discipline whose objective is the protection of people and the environment from unnecessary exposure to radiation. Radiation safety is concerned with understanding, evaluating, and controlling the risks from radiation exposure relative to the benefits derived. Same as 'health physics' and 'radiation protection.'

**Radioactive commodities**

Commodities that contain radioactive materials.

**Radiologically Contaminated Equipment**

U.S. or foreign Modified Table(s) of Organization and Equipment (MTOE), Common Table(s) of Allowances (CTA), Table(s) Distribution Allowance (TDA), or Prescribed Load List (PLL) items that were contaminated by depleted uranium or radioactive commodities as a result of combat action, maintenance activities, or accidents.

**Radiation Safety Officer/Radiation Protection Officer/Radiation Protection Staff Officer/Radiation Control Officer**

The individual designated by the commander as chief advisor and responsible party for all matters related to radioactive materials within an individual command.

**Retrograde**

Overseas command's return (retrograde) of materiel to CONUS. Retrograde cargo normally consists of unserviceable, economically repairable items and weapon systems destined for depot repair. MTMC has responsibility for the coordination and direction of all shipments; the extraction of an abandoned, disabled, or immobilized vehicle; and if necessary, its removal to a maintenance point.

**Risk assessment**

The formal or informal process used to determine the total impact of a single or several risks present on a given population for the purpose of determining appropriate actions of preserving personnel health and safety. Assessment of risk must consider the resulting effects on environmental damage. There are Health Risk Assessments and Safety Risk Assessments (FM 101-5).

**Risk decision**

The decision to accept or not accept the risk(s) associated with an action made by the individual responsible for performing that action.

**Risk management**

The process of weighing, identifying, and controlling hazards to protect the force.

**Risk management process**

The process of identifying and controlling hazards to protect the force. It includes five steps that represent a logical thought process from which users develop tools, techniques, and procedures for applying risk management in their areas of responsibility. It is a closed-loop process applicable to any situation and environment. Its five steps are:

- a.* Identify hazards: Identify hazards to the force. Consider all aspects of the current and future situations, environment, and known historical problem areas.
- b.* Assess hazards: Assess hazards to determine risks. Assess the impact of each hazard in terms of potential loss and cost.
- c.* Develop controls and make risk decisions: Develop control measures that eliminate the hazard or reduce its risk. As control measures are developed, reevaluate risks until all risks are reduced to a level where benefits outweigh potential costs.
- d.* Implement controls: Put controls in place that reduces the risk.
- e.* Supervise and evaluate: Enforce standards and controls. Evaluate the effectiveness of the controls and adjust/update as necessary.

**Risk management integration**

The method of firmly fixing the risk management process as a principle for individuals and organizations.

**Tagging**

The process of identifying that a material is radiologically contaminated. To properly tag a material the following information is necessary:

- a.* Name and signature of personnel that determined the material was radiologically contaminated or suspected to be.
- b.* The location where the material was surveyed
- c.* Date and Time
- d.* Type of isotope if known
- e.* Activity or level of contamination found. The information should be placed onto a card that can be attached with wire strand to the material, adhesive back tape, or taped on to the material so that others dealing with the material know what they are working with.

**Transportation standards**

U.S. Department of Transportation requirements established under Title 49 of the Code of Federal Regulations.

**Unrestricted use**

Same as Free Release.

**Unwanted radioactive material**

Radioactive materials that have been damaged or have reached the end of their useful life and have been determined to no longer serve the purpose for which they were intended.

**Section III****Special Abbreviations and Terms**

This section contains no entries.

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