



UNITED STATES MARINE CORPS  
MARINE CORPS AIR STATION  
BOX 99100  
YUMA, ARIZONA 85369-9100

StaO 6280.7 Ch 1  
3VA3  
12 JUN 1997

STATION ORDER 6280.7 Ch 1

From: Commanding Officer  
To: Distribution List

Subj: RADIOLOGICAL AFFAIRS MANAGEMENT PROGRAM (RAMP)

Encl: (1) New Page Insert to StaO 6280.7

1. Purpose. To direct pen changes and transmit new page insert to the basic Order.
2. Action
  - a. Attach new enclosure (3) to the basic Order.
  - b. Add new title in the "Encl:" section: "(3) Radiation Safety Program for Range Residue/Aircraft Wreckage."
3. Filing Instructions. File this Change transmittal immediately behind the signature page of the basic Order.

  
C. J. TURNER

DISTRIBUTION: B plus 3VA (15 cys)

RADIATION SAFETY PROGRAM FOR  
RANGE RESIDUE/AIRCRAFT WRECKAGE

1. Radiological Hazard

a. Range residue normally consists of discarded targets that are no longer suitable for that purpose and are therefore prepared for sale and/or turn-in to the Defense Reutilization and Marketing Office (DRMO). Many of these targets are vehicles and equipment that were formerly fully operating tactical military vehicles or equipment that contain gages and dials containing radioactive components and sources. Other sources of radioactive materials include artillery ammunition containing depleted uranium and counter balances from aircraft mishaps on both the Chocolate Mountain Aerial Gunnery Range (CMAGR) and the Barry M. Goldwater Air Force Range (BMGAFR) which are also depleted uranium.

b. The likelihood of dispersal of the radioactive element from this activity is great. Broken dials and gages will cause releases through weathering, abrasion, and absorption into the surrounding soils and air. Reference (b) requires that radiation exposure be reduced to As Low As Reasonably Achievable (ALARA). Unnecessary or unauthorized exposure to radioactive materials is prohibited. Personnel subject to exposure to ionizing radiation must be trained in the safe handling and responses to releases to these materials prior to the potential exposure. This training will be conducted by the Air Station Radiation Safety Officer (RSO) or Assistant Radiation Safety Officer (ARSO).

c. Table 1 identifies some radioactive materials that may be encountered while handling range residue. Exposure is greatest if the material is in a dial or gage that has been damaged and the material is exposed or unshielded. Care should be taken when handling any range residue where this exposure may be encountered. Inhalation hazards are those hazards where the radioactive material may be inhaled in the form of dust and other fine particles of the material itself, ingestion of materials can be from having the radioactive materials on hands and handling food, water or smoking without first washing the hands.

d. The degree to which any radioactive isotope that may be encountered on a range is directly related to the amount of time the isotope has been decaying, the amount of material surrounding the isotope (thus providing a shield) and element involved. All decisions concerning the degree of hazard will be the responsibility of the MCAS Yuma RSO or ARSO.

Table 1: POSSIBLE RADIOACTIVE ISOTOPES  
AT RANGE ACTIVITIES

Radioactive Element	Type of Radioactivity	Type of Hazard
Uranium-235	Alpha, Gamma	Inhalation and Ingestion
Radium-226	Alpha, Gamma	Ingestion and Radiation Sickness
Cobalt-60	Beta, Gamma	Radiation Burns Acute Radiation Sickness
Hydrogen-3 (tritium)	Beta	Inhalation
Thallium-204	Beta, Gamma	Inhalation Ingestion
Thorium-232	Beta, Gamma	Inhalation Ingestion

## 2. Radiation Workers

a. All radiation workers shall be trained by the RSO. The training must address exposure criteria, protection, and monitoring for radioactive materials.

b. All radiation workers must be assigned in writing by the RSO.

## 3. Inventory Control

a. All recovered radioactive materials must be handled and stored per reference (b).

b. Radioactive materials recovered at the CMAGR site will be stored at the Camp David area in a conex box to await final disposition from NAVSEASYS COM DET RASO.

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c. Exposed radioactive sources shall be reported to the MCAS Yuma RSO/ARSO when discovered for proper handling and packaging instructions prior to removal, transportation or storage.

d. The RSO shall notify security and fire departments with a written list of permanent locations of radioactive material (storage areas) at least annually and when locations permanently change. Notification shall be documented in the inventory control log.

e. The RSO shall authorize, in writing, all transfers of radioactive materials. Transfers are the shipment of radioactive materials to NAVSEADET RASO, formal change in accountability to another Federal activity, or transportation of the material that involves travel over public highways or roads. Before authorizing the transfer of radioactive material to another activity, the RSO shall have written verification that the receiver is authorized to accept the material. An acknowledgment of receipt of the radioactive material shall be obtained from the receiving activity in a timely manner. All documentation shall be retained.

#### 4. Records

a. All records must be retained for a minimum of three years. Reference (b) has duration for retention of records.

b. Range Residue. A record of the discovery of range residue containing radioactive material shall be maintained by the RSO. As a minimum, the following information shall be recorded:

- (1) Location where radioactive material discovered.
- (2) Type of equipment found in or a component of.
- (3) Radionuclide and isotope, (if known).
- (4) Type radioactivity, (i.e., Alpha, Beta, Gamma).
- (5) Activity of the material at the time of discovery.
- (6) Personnel exposed to material.
- (7) Estimated dose received by each person in mrem/hr.
- (8) Disposition of the material. (Storage location)

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(9) Turn-in documents.

(10) Date and time of discovery.

(11) Date and time of final transfer to disposal.

(12) MCAS Yuma Control number.

(13) Leak test results, if the material is in a sealed case or instrument.

(14) Unknown radionuclides must be sampled and sent to NAVSEADET RASO for identification. This information will be retained in this record.

c. The RSO shall maintain a record of all inspections, audits and investigations for each individual incident of the discovery of radioactive material.

d. The RSO will maintain a list of those personnel authorized and trained to handle radioactive materials. Each authorized person shall have a training record that indicates the level of training received. This record shall be maintained by the RSO.

e. The RSO shall assign, in writing, those personnel authorized to handle radioactive materials.

## 5. Storage

a. Radioactive material, when discovered, or in an unrestricted area and not in storage, shall be tended under constant surveillance and immediate control of an authorized person. The material shall be shielded as much as possible with any available material to reduce exposure to personnel.

b. At the permanent storage location, the radioactive material shall be stored in a locked room or container (conex box) that prevents access and removal of the material by unauthorized personnel. Only authorized personnel shall have keys to unlock the storage container or area. The entrance to the room or area shall be posted with the radiation caution symbol and the words, "Caution - Radioactive Materials."

c. When the material is in a transport vehicle, the provisions of paragraph 5.a and 5.b apply except that the posting of radiation signs need not be done.

## 6. Transportation

a. When transporting radioactive material, the substantive provisions of reference (c) apply. In particular, Parts 172 and 173 dictate documentation, marking, labeling, packaging, and the placarding of vehicles for transportation of radioactive materials. Compliance with these regulations is mandatory.

b. All radioactive material shall be transported in Department of Transportation (DOT) authorized containers. The RSO shall authorize, in writing, all shipments of radioactive materials. This written authorization shall include the words, "This package conforms to the conditions and limitations specified in 49 CFR 173.422 for radioactive material".

c. When transported in a vehicle, the shipping container shall be locked in the rear most portion of the vehicle. The shipping container shall be braced or tied down to prevent movement normally incident to transportation, protected from the elements, and locked in place.

## 7. Leak Tests

a. The RSO shall perform leak tests on all sealed sources and those contained in equipment that have been found in range residue. Unshielded sources need not be leak tested.

b. The RSO shall conduct leak tests at the time of discovery and at intervals not to exceed six months. Any source contained in shipping containers and not being moved need not be tested except when initially packaged and prior to shipping.

c. The RSO shall conduct a leak test when the material is removed from storage for transfer to another person and the leak test is not current (within the last six months).

d. The RSO shall conduct a leak test when radioactive material is received from another person with no certificate indicating that a test was performed within the last six months.

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e. The RSO shall conduct the leak test using the following procedures as a minimum:

(1) Use RAD Wipes or their equivalent, a round paper filter that is used to pick up any contamination from the device. The RAD Wipes can be obtained from the Radiation Service Organization at (301) 792-7444.

(2) Confirm that any equipment associated with the source has all power disconnected or removed, whether operable or not.

(3) Using the wipes, swab an area on each surface of the equipment or instrument, paying close attention to damaged areas, seams, seals or joints, and cracked or corroded areas, for an area of approximately 4 cm<sup>2</sup> per swab.

(4) Using the IM-247/PD Frisker Probe, survey the patch for contamination, twice background.

(5) Place the wipe in a plastic envelope and seal.

(6) If contaminated or the isotope is unknown, place the plastic envelope in a paper envelope. The envelope should be marked on the outside with the sample number, type of equipment found in (if known), the date the test was performed, and the words, "RADIOACTIVE MATERIAL, NO LABEL REQUIRED". Seal the envelope.

(7) Place the envelope in a mailing envelope and seal.

(8) Mail to NAVSEADET RASO, Yorktown, VA. for evaluation under NRMP No. 45-45650-BINP to determine contamination and isotope, if possible.

f. If more than 0.005 microcuries (uCi) or more of removable contamination is measured on the test sample, the entire instrument or device with the source material shall be packaged immediately to reduce the exposure to personnel and stored for further disposition. A complete investigation of the extent of contamination shall be conducted. Notification shall be made as required in the references or this order.

## 8. Emergency Procedures

a. The first action to be taken if an accident occurs, or if equipment or devices are discovered and damaged, is to isolate the site, and keep all personnel away from the site.

b. Call the Emergency Response Number on the shipping papers if this is a shipment of materials, or call the Station RSO for further instructions.

c. When reporting the incident to the RSO, include the following information:

(1) Immediate health hazards - potential radiation exposure. Record approximate length of time of exposure for all personnel exposed.

(2) Evaluate the risk of fire and/or explosion.

(3) Immediate precautions - see paragraph 8.d(1) or 8.e (1), as appropriate.

(4) In case of fire - see paragraph 8.d(2) or 8.e(2), as appropriate.

(5) Spill response - see paragraph 8.d(3) or 8.e(3), as appropriate.

(6) Preliminary first aid - as needed. Care should be exercised to ensure that all visible contamination is removed as soon as possible to avoid tissue damage from the radionuclide. This can usually be accomplished by flushing with water or swabbing with cotton or Q-tips.

d. Minor Damage. If the equipment or device is superficially damaged, dented, or otherwise injured from a drop, minor runover, etc., and the source appears to be in place, then do the following:

(1) Do not walk through the site where the equipment, device, or source was found, pushed or pulled. Turn the equipment or device over to view the source, only if necessary, to further evaluate a situation. Visually inspect the source area for damage.

(2) Allow fire department personnel to proceed normally.

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(3) If the source area is intact, pick up the device or equipment, if possible, place it in a container, and place in a designated permanent storage area. Request RSO assistance to check the condition of the equipment or device.

(4) The RSO shall contact NAVSEADET RASO for disposition instructions for all radioactive material found in range residue or aircraft wreckage.

e. Major Damage. If equipment or devices are broken apart, severely burned, severely crushed, the parts strewn around, or the sources visibly damaged, then do the following:

(1) Keep personnel out of the immediate area, and secure the site. Rope off the site for a distance of at least 30 feet around. Do not allow personnel to walk through the area. If radioactive material is loose, it can be picked up and tracked elsewhere.

(2) Allow the fire department personnel to proceed normally. Fire department personnel's prevention of risk to life and property is primary. Prevention of disturbing and enlarging the boundaries of the contaminated site is secondary.

(3) The RSO shall check the site with an operating radiation survey meter to determine if the radioactive material is lost or intact. This survey shall also be used to establish restricted and unrestricted boundaries for the contaminated areas at the site.

(4) The RSO shall determine whether the site is safe and shall remove and contain the contamination with a long handled tool, if possible.

(5) The RSO shall contact NAVSEADET RASO for disposition instructions concerning the radioactive material found in the range residue or aircraft wreckage.

## 9. Reporting Requirements

a. The following situations require immediate notification of the Commanding Officer, Command Duty Officer, and RSO. They will provide voice and message notification using OPREP-3 NAVY BLUE REPORT. An OPREP-3 NAVY BLUE REPORT shall be made in accordance with OPNAVINST 3100.6 for the conditions listed below. NAVSEASYSKOM (07R) and NAVSEADET RASO shall be information addressees to the OPREP-3 NAVY BLUE REPORT.

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(1) An individual who could receive one of the following in a 24 hour period:

(a) A total effective dose equivalent exceeding five (5) radiation equivalent man per year (rems/yr) or three (3) rems/quarter year.

(b) An eye dose equivalent of fifteen (15) rems.

(c) A shallow-dose equivalent to the skin or extremities exceeding fifty (50) rems.

b. Source leak test results which indicate a total removable activity of 0.005 uCi/gram (g) or more. The report shall specify the equipment involved, test results and corrective action.

c. Theft or loss of radioactive material per the references.

d. Radiation incidents, per 10 CFR 30.50:

(1) Any event that prevents protective actions necessary to avoid radiation exposure that could exceed regulatory limits.

(2) An unplanned contamination event that causes access to the contaminated area to be restricted for more than 24 hours.

(3) Any safety equipment is disabled or fails to function as designed when it is required by regulation to prevent radiation exposure from exceeding regulatory limits or to mitigate consequences of an accident and redundant equipment is not available or does not perform.

(4) An unplanned fire or explosion damaging the radiation source, device or equipment.

(5) An unplanned treatment of a contaminated individual.

e. Written Notification/Report of Exposures, Radiation Levels and Concentrations of Radioactive Material Exceeding Limits and Follow-up Reports. A written report shall be made within fifteen (15) days to CNO (N45) with copies to NAVSEASYS COM (SEA 07R) and NAVSEADET RASO for the following conditions listed below. The report shall describe details of the incident and overexposure and planned corrective action taken to prevent a recurrence. Each report will have a separate section which lists the name, address, telephone number, social security number, date of birth, and exposure estimate for each individual exposed.

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(1) Radiation incident (10 CFR 20.2202) reported by OPREP-3 NAVY BLUE REPORT per paragraph 9.a above.

(2) Theft or loss (10 CFR 20.2201) reported by OPREP-3 NAVY BLUE REPORT per paragraph 9.c. above.

(3) Theft or loss of radioactive material (10 CFR 20.2201).

(4) Exposures, radiation levels, and concentrations of radioactive material exceeding limits defined in 10 CFR 20.2203 which include:

(a) Occupational exposure of an individual exceeding the quarterly or annual limits specified in NAVMED P-5055, Chapter 4.

(b) Exposure of any minor exceeding 10 percent of the annual occupational limits (500 mrem).

(c) Radiation levels (whether or not actual exposure of individuals is involved) in an unrestricted area (i.e., 20 mrem).

(d) Any exposure to a non-occupationally exposed individual (member of the public) exceeding 100 mrem in a calendar year.

f. Notification/Written Report of Significant Abnormal Occurrence. In the event of a significant abnormal occurrence not covered by the notification requirements above (such as temporary loss of custody), the Command shall take appropriate measures to return the situation to normal. The Command shall then notify NAVSEADET RASO, review the matter, and document the review. Documentation of the review shall include preparation of narrative summary which identifies the cause of the occurrence and specifies corrective action taken to prevent recurrence. A copy of the narrative summary concerning the abnormal occurrences shall be sent to NAVSEADET RASO within thirty (30) days after the occurrence of the incident or discovery thereof.

g. Notification Information

(1) Chief of Naval Operations (N45)  
Washington, DC 20350-2000

Message address: CNO WASHINGTON DC//n45//

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- (2) Commander, SEA 07R, Naval Sea Systems Command,  
2531 Jefferson Davis Highway, Arlington, VA  
22242-5160

Telephone Number: DSN 332-1252  
Commercial (703) 602-1252

Message address: NAVSEASYSKOM WASHINGTON  
DC//07R//

- (3) Officer in Charge, Naval Sea Systems Command  
Detachment, Radiological Affairs Support Office  
NWS P. O. Drawer 260, Yorktown, VA 23691-0260

Telephone Number: DSN 953-4692  
Commercial (804) 887-4692

Message address: NAVSEA DET RASO YORKTOWN VA//00//

- (4) NAVSEASYSKOM (07R) and NAVSEADET RASO shall be information  
addressees to any OPREP-3 NAVY BLUE REPORT.

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