UNITED STATES MARINE CORPS
MARINE CORPS BASE
PSC BOX 20004
CAMP LEJEUNE, NORTH CAROLINA 28542-0004

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BASE ORDER 5104.1

From: Commanding Officer
To: Distribution List

Subj: RADIATION SAFETY PROGRAM

Ref: (a) MCO 5104.3A
(b) MCO 5100.29A
(c) 10 CFR, Energy (NOTAL)
(d) 49 CFR, Transportation (NOTAL)
(e) S0420-AA-RAD-010
(f) NAVMED P-5055
(g) MCO P4400.150E
(h) TI-5104-15/2A Special Handling, Tritium Fire Control Instruments Infantry and Artillery MC RASP
(i) OPNAVINST 3100.6G
(j) DOD 4500.9-R

Encl: (1) LOCATOR SHEET
(2) Radiation Protection Assistant Appointment Letter

1. Situation. As directed by guidance in references (a) through (j), this Order provides policy and assigns responsibility for administering the Installation Radiation Safety Program. The Order delineates and enacts the program elements necessary to assure compliance with the references, the Department of the Navy's NRC Master Materials License, and specific Naval Radioactive Materials Permits (NRMP) issued to Marine Corps commands.

2. Mission. This Order establishes a formal Radiation Safety Program aboard Marine Corps Base (MCB), Camp Lejeune to minimize the risk of injury to personnel and the general public, contamination of personnel and facilities and loss of control of sources of ionizing radiation.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

3. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent

(a) Enhance unit and individual readiness by maintaining an effective Radiation Safety Program per reference (a) and compliance with pertinent regulations.

(b) Control sources of ionizing radiation to minimize personnel exposures to a level as low as reasonably achievable (ALARA) and to prevent contamination of personnel, equipment, and facilities.

(c) Provide guidance and requirements for implementing references (a) through (j), for sources of ionizing radiation used aboard MCB, Camp Lejeune.

(2) Concept of Operations

(a) The Commandant of the Marine Corps (CMC) has assigned the Commanding General, Marine Corps Logistics Command (COMMARCORLOGCOM) to serve as the lead agent for managing NRMPs for commodities containing radioactive materials in the Marine Corps, and to act authoritatively on behalf of the CMC for all matters under the auspices of the commodity NRMPs and RADCON Programs throughout the Marine Corps.

(b) The Marine Corps Radiological Controls Office (RADCON) was established to manage the radioactive commodity NRMPs issued to COMMARCORLOGCOM.

(c) The Logistics Radiation Safety Officer (LRSO) and Assistant Logistics Radiation Safety Officer (ALRSO) have been assigned to the RADCON office to manage NRMPs issued for radioactive commodities in the Marine Corps and to oversee Marine Corps-wide compliance.

(d) The LRSO is responsible for the accountability and management of radioactive commodities and to oversee their use throughout the Marine Corps.

(e) The LRSO has the authority to halt immediately operations governed by the RADCON Program that are significantly

unsafe and to report directly to the COMMARCORLOGCOM and the local commander those circumstances or conditions that adversely affect compliance with commodity NRMPs.

(f) The Radiation Safety Officer (RSO) assigned by the license or NRMP will manage all other radioactive commodities that are held under separate licenses or NRMPs not issued to the Marine Corps RADCON Office.

(g) The Installation RSO has oversight over all Radiation Safety Programs and operations involving radioactive materials conducted aboard the Installation.

(h) The Command RSO is directly responsible for all radiation safety programs and operations involving radioactive materials conducted under their command.

b. Subordinate Element Mission

(1) Installation Radiation Safety Officer (IRSO). The IRSO is the individual appointed in writing at the installation or base level who is responsible for coordinating the RADCON Program. The IRSO has oversight over all radiation programs aboard the Installation to include tenant commands that maintain radioactive devices on the Installation. The IRSO reports directly to the Base Commanding Officer. The IRSO is staffed under the Installation Security and Safety Department, Base Safety Division. The IRSO will:

(a) Develop and implement the Installation Radiation Safety Order, and publish and distribute applicable Installation messages, bulletins, or notices as required.

(b) Recommend the appointment of Assistant IRSOs (AIRSO) to the Installation Commander in sufficient numbers to administer the RADCON Program at the Installation and provide appropriate training to each AIRSO. In the temporary absence of the IRSO from the Installation, the AIRSO will be appointed to fulfill the IRSO's duties.

(c) Coordinate and direct the action of the AIRSOs in the administration of the RADCON Program.

(d) Maintain inventory reports of NRMP radioactive commodities or sources under the Installation's control. Installation inventory reports will be reconciled with the

previous inventory to account for changes or discrepancies. The inventory report will include this reconciliation (statement of changes, losses, additions, or updates). Submit Installation physical inventory and inventory reconciliation reports to the LRSO, per the appropriate NRMP requirements.

(e) Maintain copies of Installation and tenant activity inventory reports of licensed sources of ionizing radiation.

(f) Maintain Decommissioning Files containing copies of inventory reports, areas of use, facility surveys and reports of radiation incidents and accidents.

(g) Perform required leak tests on the Base NRMP radioactive commodities or sources, per the procedures in the applicable NRMPs and forward the leak test packages to the LRSO via certified mail.

(h) Manage the Installation's Low Level Radioactive Waste (LLRW) Program. Dispose of LLRW through the Navy LLRW Program. Coordinate the disposal of LLRW with the Radiological Affairs Support Office (RASO) and provide copies of the manifests to the LRSO.

(i) Ensure proper handling and control of radioactive materials, including receipt, storage, shipping, and disposal operations at Installation activities and tenant commands.

(j) Maintain liaison with tenant Command Radiation Safety Officers (CRSOs) and Radiation Protection Assistants (RPAs).

(k) Establish and implement a training program for AIRSOs and all Installation personnel involved in emergency response and the receipt, maintenance, handling, packaging, transferring and shipping of radioactive commodities.

(l) Provide lists of inventories and storage locations of radioactive materials and commodities to the Installation Fire and Emergency Services Division (FESD) and emergency response personnel.

(m) Coordinate the procurement of any generally-licensed or license-exempt radioactive devices with the LRSO and/or CMC (SD).

(n) Establish local procedures and maintain close liaison with the Defense Reutilization and Marketing Offices (DRMO) and other Base organizations to prevent unauthorized transfer or delivery of any radioactive materials to the DRMO.

(o) Conduct and document an annual review of the RADCON Program for all Base and tenant commands using the RADCON Program Review Checklist. Reviews should include compliance with applicable Naval Radioactive Materials Permits, NRC Materials Licenses, this Order and its references. Report results of the review to the LRSO via the Base Commanding Officer.

(p) Maintain liaison with the Navy Radiation Health Officer assigned to the supporting Naval medical facility to coordinate the Radiation Health Program and the RADCON Program per references (e) and (f).

(q) Appoint in writing individuals responsible for inspecting and approving shipments of radioactive materials. Provide a copy of the appointment letters to the Transportation Management Officer (TMO).

(r) Oversee the shipment and transportation of sources of ionizing radiation on to and off of the Installation.

(2) Command Radiation Safety Officer (CRSO). Appointed in writing, the CRSO is the designated individual at the II Marine Expeditionary Forces (MEF) or Major Subordinate Command (MSC) level tasked with direct oversight of radiation safety practices and procedures. **Whenever possible**, assignment of the CRSO will be from the Command Safety Office. The CRSO will:

(a) Develop and implement the command RADCON Program procedures, and publish and distribute applicable command messages, bulletins, or notices, as required.

(b) Serve as the primary point of contact for RADCON Program issues that arise within any subordinate command.

(c) Appoint in writing Assistant CRSOs (ACRSO) and RPAs in sufficient numbers to administer the RADCON Program for the command and subordinate units and provide appropriate training.

(d) Coordinate and direct the actions of the command RPAs in the administration of the command RADCON Program.

(e) Maintain a consolidated inventory of command NRMP radioactive commodities or sources. Command inventory reports will be reconciled with the previous inventory to account for changes or discrepancies. The inventory report will include this reconciliation (statement of changes, losses, and additions or updates). Maintain copies of command and subordinate-activity inventory/reconciliation reports of licensed sources of ionizing radiation.

(f) Oversee leak tests (Wipe Tests) required for NRMP radioactive commodities or sources, per the procedures in the applicable NRMPs, and forward the leak test packages to the LRSO via certified mail.

(g) Ensure disposition instructions for radioactive commodities provided by the inventory control manager and LRSO are administered. Coordinate with the IRSO for approval prior to the shipment of equipment with radioactive materials.

(h) Coordinate with the IRSO for the disposal and storage of LLRW.

(i) Maintain liaison with the IRSO and AIRSO.

(j) Establish and implement a training program for command RPAs and for those command personnel involved in the receipt, maintenance, handling, packaging, transfer, transporting and shipping of radioactive commodities.

(k) Ensure personnel responsible for shipping radioactive materials have received training specifically addressing the shipment of radioactive materials.

(l) Appoint in writing individuals responsible for shipping radioactive materials. The letter will identify the scope of authority and an expiration date. Provide a copy of the appointment letters to TMO.

(m) Maintain liaison with the RPAs within the command who have been appointed oversight of specific NRMPs or radiation safety programs.

(n) Notify the IRSO of all locations of stored or in-use radioactive materials by providing the IRSO with a copy of each reconciled inventory report that was forwarded to the LRSO.

(o) Coordinate the procurement of any generally licensed or license-exempt radioactive devices with the LRSO and/or CMC (SD) via the IRSO.

(p) Conduct and document an annual review of the RADCON Program for all subordinate commands using the RADCON Program Review Checklist. Reviews should include compliance with applicable Naval Radioactive Materials Permits, NRC Materials Licenses, Marine Corps Orders, Base Orders and local standing operating procedures (SOPs). Report results of the reviews to higher headquarters via the IRSO and LRSO by 30 November of each year.

(q) Conduct internal audits and inspections per reference (a) and enclosure (1) of this Order to evaluate compliance with federal and Navy regulations, Orders, permits and licenses.

(3) Base Fire Chief. The Fire Chief will ensure that the FESD is capable of supporting emergency response actions in the event of a radiological incident. The Fire Chief will:

(a) Appoint an RPA in writing to administer the RADCON Program for the Division and provide appropriate training. An example RPA appointment letter is provided in enclosure (2).

(b) During on-site radiological emergencies, assume the responsibilities of Incident Commander.

(c) Ensure FESD personnel designated as emergency response personnel receive annual training on radiation safety and radiological emergency response hazards as outlined in enclosure (1), Chapter 13, paragraph 4d.

(d) Maintain a copy of inventories provided by the IRSO to identify the locations of radioactive materials stored aboard the Base.

(e) Ensure FESD personnel designated as emergency response personnel are knowledgeable of where radioactive materials are stored or maintained in their areas of responsibility.

(f) Ensure all female personnel who handle radioactive commodities and their supervisors are properly trained regarding the potential hazards of ionizing radiation exposure to the embryo or fetus as outlined in enclosure (1), Chapter 13, paragraph 4c .

(g) Ensure all personnel who handle, store or operate equipment containing radioactive material receive annual radiation safety training as outlined in enclosure (1), Chapter 13, paragraph 4b.

(h) Ensure inventories of radioactive materials physically in the custody of the FESD are conducted and provided to the IRSO as outlined in enclosure (1), Chapter 5, paragraph 2.

(i) Ensure personnel who have not received radiation safety training do not act as emergency response personnel during on-site radiological emergencies.

(j) Notify the IRSO of all radiological emergencies accidents and incidents.

(k) Ensure compliance with this Order and all applicable regulations regarding radioactive materials.

(4) Base Provost Marshal. The Provost Marshal (PM) will ensure that the Provost Marshal's Office (PMO) is capable of supporting emergency response actions in the event of a radiological incident. The Provost Marshal will:

(a) Appoint in writing an RPA to administer the RADCON Program for the Division and provide appropriate training. An example RPA appointment letter is provided in enclosure (2).

(b) Establish written local procedures that outline local radiological control program requirements.

(c) Provide physical security in the event of a radiological incident.

(d) Ensure all military police personnel designated to respond to radiological incidents receive annual training on radiation safety and radiological emergency response hazards as outlined in enclosure (1), Chapter 13, paragraph 4d.

(e) Ensure all female personnel who handle radioactive commodities and their supervisors are properly trained regarding the potential hazards of ionizing radiation exposure to the embryo or fetus as outlined in enclosure (1), Chapter 13, paragraph 4c.

(f) Ensure all personnel who handle, store or operate equipment that contains radioactive material receive annual radiation safety training as outlined in enclosure (1), Chapter 13, paragraph 4b.

(g) Ensure inventories of radioactive materials physically in the custody of the PM are conducted and provided to the IRSO as outlined in enclosure (1), Chapter 5, paragraph 2.

(h) Ensure all military police security personnel are knowledgeable of the locations of radioactive materials stored or maintained in their areas of responsibility.

(i) Notify the IRSO of all radiological emergencies accidents and incidents.

(j) Ensure compliance with this Order and all applicable regulations regarding radioactive materials.

(5) Program Manager, Anti-Terrorism/Force Protection (AT/FP). To ensure that radiation exposure levels for personnel are maintained within ALARA and that contamination is reduced to a minimum, the AT/FP Program Manager will:

(a) Appoint an RPA to administer the RADCON Program for the Division and provide appropriate training. An example RPA appointment letter is provided in enclosure (2).

(b) Establish written local procedures that outline local radiological control program requirements.

(c) Ensure all personnel who handle, store or operate equipment that contains radioactive material receive initial and annual refresher radiation safety training as outlined in enclosure (1), Chapter 13, paragraph 4b.

(d) Ensure all female personnel who handle radioactive commodities and their supervisors are properly trained regarding the potential hazards of ionizing radiation exposure to the embryo or fetus as outlined in enclosure (1), Chapter 13, paragraph 4c.

(e) Ensure inventories of radioactive devices physically in the custody of the Division are conducted and provided to the IRSO as outlined in enclosure (1), Chapter 5, paragraph 2.

(f) Notify the IRSO of all radiological emergencies accidents and incidents.

(g) Ensure personnel responsible for shipping radioactive materials have received training specifically addressing the shipping of radioactive materials.

(h) Appoint in writing individuals responsible for shipping radioactive materials. The letter will identify the scope of authority and an expiration date. Provide a copy of the appointment letters to TMO.

(i) Ensure compliance with this Order and all applicable regulations regarding radioactive materials.

(6) Traffic Management Officer (TMO). To ensure radiation exposure levels for personnel are maintained within ALARA and contamination is reduced to a minimum, the TMO will:

(a) Appoint an RPA to administer the RADCON Program for the Division and provide appropriate training. An example RPA appointment letter is provided in enclosure (2).

(b) Ensure that all personnel assigned to the Shipping and Receiving Branch who may handle shipments

containing radioactive materials receive initial and annual refresher radiation safety training.

(c) Ensure personnel responsible for shipping radioactive materials have received training specifically addressing the shipping of radioactive materials.

(d) Appoint in writing individuals responsible for shipping radioactive materials. The letter will identify the scope of authority and an expiration date. Maintain a file copy and provide a copy of the appointment letters to the Base Safety Office.

(e) Publish written procedures for receiving, inspecting, opening of packages and the storing of incoming shipments containing radioactive materials.

(f) Publish written procedures for inspecting, storing and handling packages containing radioactive materials prior to shipment.

(g) Publish written emergency action procedures identifying steps to take during an accident or incident involving radioactive materials.

(h) Notify the IRSO of all radiological emergencies accidents and incidents.

(i) Ensure compliance with this Order and all applicable regulations regarding radioactive materials.

(7) Installations and Environment Department, Resident Officer in Charge of Construction (ROICC). To guarantee the safety of personnel, including authorized contractors, the ROICC will ensure that the following Radiation Safety Program requirements are completed for all ROICC controlled operations aboard the Base involving radioactive devices:

(a) Request authorization from the IRSO prior to allowing contract personnel to transport radioactive devices aboard the Base.

(b) Provide instructions to contract personnel on the requirement for requesting authorization prior to transporting radioactive devices aboard the Installation.

(c) Ensure safety procedures for handling and using radioactive devices are addressed in the Accident Prevention Plan (APP) and Activity Hazard Analysis (AHA).

(d) Ensure that contract personnel have established written procedures for emergencies involving radioactive materials. This will include coordination with civilian and/or military emergency response organizations as applicable. Maintain a copy of these procedures at the ROICC office; provide a copy to the IRSO and emergency response organizations.

(e) Ensure the IRSO is notified of all radiological incidents, accidents and emergencies to include loss or theft of radioactive devices.

(f) Ensure contract personnel conducting operations involving the use of radioactive devices aboard the Base are familiar with and are in compliance with the following regulations:

1. 29 CFR 1910.1096, Ionizing Radiation.

2. 10 CFR 20, Standards for Protection Against Radiation.

3. EM 385-1-1, Safety and Health Requirements, (Section 6.E, Ionizing Radiation).

(g) Ensure operations involving radiation hazards or radiation generating devices are performed under the direct supervision of a designated RSO.

(h) Transportation of radioactive devices aboard the Base will be conducted per reference (e) and will be accompanied by a Radioactive Material Movement Form or similar document containing pertinent information required in case of an emergency. See enclosure (1), Chapter 8, figure 8-1.

(8) Radiation Protection Assistant (RPA). The RPA is critical to the command and is appointed to assist the CRSO and IRSO in administering the RADCON program. RPAs will be assigned in writing at all units or organizations where radioactive materials are stored or maintained. An example RPA appointment letter is provided in enclosure (2).

The RPA is responsible to his/her tenant unit commander, commanding officer, OIC, or director for all matters relating to ionizing radiation safety. The RPA will:

(a) Establish, implement and maintain an effective RADCON Program, which complies with this Order and as appropriate, NRMPs, NRC Licenses and other pertinent Navy and Marine Corps directives and federal regulations. The Program at the user level may be established in a desktop or SOPs.

(b) Provide advice and assistance to all elements of the command regarding matters pertaining to RADCON, ionizing radiation safety requirements, procedures, and command policy.

(c) Establish liaison with the CRSO to coordinate the RADCON and Ionizing Radiation Health Programs.

(d) Perform surveys, leak tests, inspections, inventories and emergency exercises as required to ensure compliance with the applicable provisions of this Order and other pertinent Navy and Marine Corps directives, specific NRMPs, NRC licenses, and federal regulations.

(e) With the assistance of the CRSO, develop, coordinate and conduct orientation and training programs for occupationally exposed personnel as outlined in enclosure (1), Chapter 13, paragraph 4b.

(f) Act authoritatively for the Commander/Commanding Officer/OIC/Director to ensure RADCON Program deficiencies are corrected expeditiously and personnel exposure to sources of ionizing radiation is maintained ALARA.

(g) Maintain applicable NRMPs, licenses, directives and regulations to ensure the RADCON program is current and in compliance with federal regulations.

(9) Radiation Workers/Limited Radiation Workers. Radiation workers or limited radiation workers are individuals who operate, maintain, store, inventory, ship or receive equipment with radioactive materials. Radiation workers/limited radiation workers will:

(a) Obey all verbal and written radiological control instructions.

(b) Not handle radioactive materials unless they have received and have documented the required training appropriate to the operations they are to perform.

(c) Wear dosimeters (e.g., thermoluminescent dosimeters (TLDs), pocket dosimeters) when required by reference (a), NRMPs or NRC licenses.

(d) Promptly report to their supervisor and/or RPA any incident, personnel injury, suspected overexposure, contamination and any suspicious or questionable occurrence involving ionizing radiation sources.

(e) Be thoroughly familiar with equipment, procedures and the requirement for and use of any special devices to include personal protective equipment (PPE) prior to using or operating any source or device which produces ionizing radiation.

(f) Maintain exposure limits to ionizing radiation within the concept of ALARA. Avoid any unnecessary exposure, and use the concepts of time, distance, shielding, and contamination control when working in the presence of ionizing radiation sources.

(10) Responsible Officer (RO). Per reference (g), the responsible unit having custody of the licensed or permitted radioactive commodities must assign an RO. The RO will receive radiation-safety training that is commensurate with one's duties and responsibilities. The RO will:

(a) Perform or ensure the conduct of RADCON Program requirements for the receipt, handling, storing, physical inventory, packaging and shipping of licensed sources of ionizing radiation is within compliance to applicable regulations.

(b) Perform or ensure that documentation and reporting requirements are fulfilled.

(c) The RO may be the same individual appointed as the RSO or RPA.

c. Coordinating Instructions. This Order has been coordinated with and concurred by the Commanding Generals, II

Marine Expeditionary Force, 2d Marine Division, 2d Marine Logistics Group, U.S. Marine Corps Forces, Special Operations Command, Marine Corps Installations East, and Commanding Officers of Marine Corps Air Station, New River, Naval Hospital, Naval Dental Center and Special Missions Training Center, U.S. Coast Guard.

4. Administration and Logistics

a. Administration. It is the responsibility of the IRSO to ensure this Order is current and maintained with all regulatory requirements.

b. Logistics. This Order will supplement existing Navy regulations, Marine Corps Orders and instructions, CFR Titles 10, 29, 40, and 49, and other pertinent regulatory documents and publications to manage an efficient and compliant radiological controls program.

5. Command and Signal

a. Command. This Order applies to all Marine Corps and civilian personnel aboard Camp Lejeune who are responsible for procuring, using, and storing or are responsible for training users of sources of ionizing radiation. For the purpose of this Order, sources of ionizing radiation are defined as radioactive materials in commodities and equipment or radiation-producing equipment. This Order does not apply to the use of any fixed or portable medical x-ray equipment used by health service personnel in support of Marine Corps operations.

b. Signal. This Order is effective the date signed.

W. A. MEIER
By direction

DISTRIBUTION: A

LOCATOR SHEET

Subj: RADIATION SAFETY PROGRAM

Location: _____
(Indicate the location(s) of the copy(ies) of this Order.)

RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Date Entered	Signature of Person Incorporated Change

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Chapter 1

Reporting of Radiation Accidents and Incidents

1. General. To report a radiation incident or accident, the following guidelines are provided:

a. Accidents and incidents involving NRMP or NRC-license controlled radioactive material will require immediate voice or message notifications.

b. Notifications of NRMP-controlled radioactive materials will use OPREP-3 NAVY BLUE procedures specified in reference (i).

c. Contact the Installation Radiation Safety Officer (IRSO) or the Radiological Controls Office (RADCON) for assistance in determining reporting conditions and requirements.

d. Additional reporting notification requirements are as follows:

(1) Situations involving command-held NRMP radioactive materials require that the command make notification using the OPREP-3 NAVY BLUE process.

(2) Situations involving radioactive commodity NRMPs will be reported immediately to the RADCON Office. The RADCON Office will make appropriate OPREP-3 NAVY BLUE notifications for situations involving radioactive commodity NRMPs.

(3) Situations involving radioactive materials controlled by the Army must be reported immediately to the appropriate RSO as identified in the license or permit.

(4) Situations involving radioactive commodity NRMPs held by the Base will be immediately reported to the IRSO.

(5) Further guidance in reporting procedures can be found in reference (c), Part 20, subpart M.

2. Reporting Procedures. All accidents and incidents (lost, missing, damaged) involving radioactive materials will be immediately reported per the command's radiation safety program. At a minimum, an accident or incident will be immediately

reported to a supervisor and the RPA of the unit involved. The RPA is responsible for notifying the CRSO. The CRSO will notify the LRSO and IRSO as applicable. To assist the CRSO in reporting the incident, the RPA will complete the User Incident Reporting Worksheet, figure 1-1. The RSO will submit a written report to the RADCON office within 15 days using the RSO Incident Report Checklist, figure 1-2, as a guide for providing the appropriate information. Base personnel will immediately notify the IRSO of all accidents and incidents involving radioactive materials.

3. Report Retention. The RSO will retain accident and incident reports involving radioactive materials.

a. All reports will be kept for a minimum of 3 years.

b. Reports involving facilities aboard the Base will be retained indefinitely by the CRSO and IRSO. The CRSO will provide a copy to the IRSO to be placed in the Base Decommissioning Files.

4. Contact and Notification Information. The radiological controls program involves a wide variety of organizations and commands. When reporting a radiological accident or incident, it is important to know whom to contact. Appendix A provides a list of key point of contacts to assist you with your program. Organizations within the reporting chain are to be notified of a radiological accident or incidents as outlined in Appendix B.

Report Control Symbol: DD-5102-02

User Incident Reporting Worksheet

User Submitting Report (Optional)	**Address of User Submitting Report:**
Name	
Phone Number	
Cognizant RSO	**Unit Commander**
Name	Name
Phone Number	Phone Number
Item Involved (Nomenclature, NSN , Part Number	
Date and Time of Occurrance	
Names of Personnel Involved	
RSO Notification (Date/Time)	
Additional Comments	

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Figure 1-1. -- User Incident Reporting Worksheet

Report Control Symbol: DD-5102-02

RSO INCIDENT REPORT CHECKLIST

A. THE EVENT

_____ 1. Name and phone number of person reporting
_____ 2. Date and time of occurrence
_____ 3. Item involved
_____ 4. Isotope and total activity involved
_____ 5. Where event occurred
_____ 6. Number of personnel involved

B. NOTIFICATIONS

_____ 1. Unit commander
_____ 2. IRSO/CRSO as applicable
_____ 3. ILRSO (Marine Corps Racon)

C. ACTIONS TAKEN

_____ 1. Is item controlled (bagged, placed in hood, secured)?
_____ 2. Have wipes of item been taken?
_____ 3. Has area been wiped (including adjacent areas)?
_____ 4. Has ventilation been wiped?
_____ 5. Is area isolated (if necessary)?
_____ 6. What is the decon status?
_____ 7. Have bioassays been performed (if NEEDED)? (only after 4 hours have elapsed)

D. INFORMATION ABOUT ITEM(S)

_____ 1. History of item (where it came from)
_____ 2. Condition of item upon receipt
_____ 3. What was done to the item after receipt?
_____ 4. Where is the item stored?
_____ 5. Where is the item worked?
_____ 6. What precautions were taken?
_____ 7. Was/is item illuminated?
_____ 8. How many people handle the item?
_____ 9. What caused the problem?
_____ 10. What corrective actions are planned?

E. PERSONNEL STATUS

_____ 1. Were personnel involved properly trained?
_____ 2. Were all personnel involved interviewed?
_____ 3. Were ALL persons involved BIOASSAYED?

F. SUBMIT WRITTEN REPORT TO: Marine Corps Radcon Staff within 15 days.

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Figure 1-2. -- RSO Incident Report Checklist

Chapter 2

Contamination Control

1. General. The key to maintaining control and prevention of contamination is practicing good general housekeeping and sound work procedures. This will help to prevent the unnecessary spread of radioactive materials to undesirable locations and reduce the exposure limits of personnel. References (a), (e) and (f) provide added information to assist in controlling contamination.

2. Additional Guidelines. The following guidelines are provided to further assist you in preventing and controlling contamination:

a. Eating, drinking, chewing, smoking or applying makeup is prohibited in areas where radioactive materials are stored, handled, or maintained.

b. Wash hands with a non-abrasive mild soap and water after handling equipment containing radioactive materials.

c. Proper PPE will be worn when handling contaminated or suspected contaminated equipment. At a minimum, rubber gloves will be worn when handling contaminated equipment.

d. Contaminated PPE will be double bagged and disposed of as LLRW.

e. Work surfaces on which radioactive devices are repaired will be covered with removable material, e.g., Kraft paper, plastic sheeting, etc. The covering will be maintained to ensure work surfaces are protected from contamination.

f. Only properly trained personnel will handle and transport equipment containing radioactive materials.

g. When equipment is damaged and/or suspected of being contaminated, immediately follow the procedures outlined in your command's/unit's written emergency procedures. Minimally, you will double bag the item in plastic bags and notify your RPA or CRSO.

h. When transporting equipment containing radioactive materials, the items will be properly secured to the vehicle to prevent breakage.

i. Radioactive materials will not be disposed of through DRMO or the landfill. Proper disposition instructions will be requested via the appropriate approving authority. Contact the RSO for questions concerning the proper disposition of radioactive materials.

j. Areas for handling, storing and maintaining equipment containing radioactive material will be designated and separated from non-radioactive equipment.

k. Protective clothing will be removed or monitored for contamination before an individual leaves a contaminated area.

l. Individuals leaving a contaminated area will be monitored for contamination using an AN/PDR-56 (or equivalent) with small probe for alpha activity and an IM-247 APD series RADIAC with DT-304 probe (or equivalent) for beta-gamma activity, or an AN/VDR-2 (or equivalent) for beta-gamma activity, as applicable. When a contact reading indicates detectable contamination, the affected areas will be decontaminated per approved procedures.

m. Tools and equipment used in a contaminated area will be routinely monitored and decontaminated as necessary before release to unrestricted areas.

n. Clothing and items released for unrestricted use will meet the contamination limits provided by the LRSO or NAVSEADET RASO.

o. Any injury sustained in a contaminated area will be reported to the RSO and evaluated by medical personnel.

p. Contamination control will not take priority over medical treatment of injuries sustained in a contaminated area.

Chapter 3

Decommissioning Records

1. General. Decommissioning, in regards to the radiological controls program, are procedures taken to determine that facilities previously used for handling, maintaining, and storage of radioactive materials are free from contamination prior to releasing the facility for unrestricted free use.

2. Records. The IRSO will maintain indefinitely a Decommissioning File. Decommissioning Files will contain copies of inventory reports, areas of use, new facility radiation surveys, radiation surveys and reports of radiation incidents and accidents.

3. Decommissioning of Facilities. When a facility will no longer be used for handling, maintaining or storing radioactive materials or commodities, it must be decommissioned. Decommissioning a facility is to return the facility to a condition that provides for the health and safety of the general public and the environment. This will ensure that the facility is free from radiation contamination hazards and can be released for unrestricted use.

a. Prior to releasing a facility for unrestricted use, the command will conduct a comprehensive radiation survey, which will establish if contamination is present, if it is below the limits specified in table 4 of reference (e). A copy of this report will be forwarded to NAVSEADET RASO via the IRSO and LRSO. The survey report will contain at a minimum:

(1) Complete description of the facilities and the history of use.

(2) List of radioactive materials or commodities stored or used.

(3) Previous surveys and general procedures used in the facilities.

(4) Reports of any accidents or incidents that may have occurred involving radioactive material.

(5) Show a reasonable effort was made to eliminate residual contamination.

(6) Describe the scope of the survey and general procedures followed.

(7) Summarize the results of the survey in units specified in Table 4 of reference (e) and identify the surveyor and instrument used.

b. Release of the facilities (for example, abandonment or re-use) is not authorized without written approval from NAVSEADET RASO or the LRSO as applicable.

Chapter 4

Disposal of Radioactive Materials and Waste

1. Introduction. The reduction of radioactive waste is everyone's responsibility. All attempts should be made to ensure the radioactive material cannot be reused and is, in fact, radioactive waste.

2. Identification. The following guidelines are provided for properly identifying radioactive materials as waste:

a. Surplus Radioactive Commodities. Surplus radioactive commodities will not be transferred to the DRMO but will be retained until disposition instructions are received from the inventory control point.

b. Non-repairable Radioactive Commodities. Irreparable items or items that cannot be decontaminated will be disposed of per the disposition instructions provided by the inventory control manager. The owning unit or maintenance activity is responsible for requesting disposition instructions, which will be requested per local procedures.

c. Lensatic Compasses. Compasses containing radioactive material, that are determined unserviceable per TI-01592C-15/1 and additional instructions will be disposed of locally as Low Level Radioactive Waste (LLRW). Unserviceable compasses will be transferred to the LLRW Site Manager located at the Installation Radiation Safety Office. The LLRW Site Manager will only accept compasses that contain radioactive material.

d. Low Level Radioactive Waste (LLRW). Surplus items containing radioactive material will be disposed of as LLRW when the inventory control manager or owning activity determines that any other method of disposal is not in the best interest of the government.

3. Lensatic Compass Turn-In Procedures. Applicable compasses requiring controlled disposal as LLRW are listed in TI-01592C-15/1. Procedures for disposing of applicable compasses are as follows:

a. Determine if the compass is unserviceable per applicable technical instructions, supply instructions, equipment manuals, or naval messages.

b. Unserviceable compasses include:

(1) Damaged or defective compasses containing radioactive materials, National Stock Number (NSN) 6605-01-196-6971.

(2) Condemned Compasses no longer authorized for use, NSN 6605-00-151-5337 or 6605-00-846-7618.

(3) Compasses that exceed the 12-year shelf life from the date stamped in ink inside the compass cover.

c. Once you have determined that the compass is unserviceable and deemed as LLRW, complete the following:

(1) Remove the lanyards and pouch from each compass.

(2) Prepare a DD Form 1348, Issue Release/Receipt Document, per local instructions for each NSN to be turned in. An example DD Form 1348 is provided in figure 4-1 along with the following additional instructions:

(a) In data block 4, the "MARK FOR" block annotate "LLRW" or in data block 27, the "ADDITIONAL DATA" block, annotate " Mark For: Low Level Radioactive Waste."

(b) In data block 3. "SHIP TO" block, annotate "M67001, Base Safety, IRSO."

(c) In data block 27, the "ADDITIONAL DATA" block, annotate the name of Responsible Officer (RO) authorizing the transfer of the compasses with a signature, phone number and date.

(3) Contact the LLRW Site Manager located in the Base Safety office to schedule an appointment for turn-in.

d. Currently, there are various markings on compasses that make it difficult to determine if the compass contains radioactive materials. Applicable compasses must contain one or more of the following markings:

(1) Stamped with NSN 6605-01-196-6971, 6605-00-151-5337 or 6605-00-846-7618.

(2) Stamped with the standard tri-foil radiation symbol on the back cover of the compass.

(3) Stamped with the name of the radioactive material and specific activity of the source stamped on the back cover. The standard marking normally found is "120 mCi 3H."

e. Lensatic compasses that are suspected of contamination due to source breakage will be double bagged in plastic.

4. Unit LLRW Turn-In Procedures. Items to be disposed of as LLRW will be turned over to the Installation LLRW Storage Site Manager located at the Base Safety Office. The turn-in procedures are as follows:

a. Once the item is determined to be LLRW, through receipt of disposition instructions from the inventory control manager, naval message, published regulations or Orders or as directed by higher authority, contact the LLRW site manager to report the waste and to schedule delivery.

b. The unit will provide the following documents as applicable at the turn-in:

(1) DD Form 1348, Issue Release and Receipt Document. The form is used to transfer custody of the item and to maintain accountability. Complete the form as outlined in Users Manual 4400-124, transferring the custody to the LLRW Site Manager and identifying the material as LLRW.

(2) Disposition Instructions. Provide a copy of the disposition instructions directing disposal as LLRW.

(3) USMC Radioactive Material Movement(RAM) Form. Provide a completed copy of the RAM form.

(4) Wipe Test Results. Provide a copy of the results for the Wipe Test conducted to determine if contaminated.

(5) Incident Report. Provide a copy of the incident report if the item was involved in a radiological incident or accident.

c. The owning unit will retain all turn-in documents for a minimum of three years.

5. LLRW Inventory

a. The LLRW storage site manager will maintain an inventory of all items placed in the LLRW storage site.

b. The inventory will be updated as items are placed into the storage site.

c. A copy of the inventory will be provided to RASO at least semi-annually and as directed to facilitate scheduled pickups.

6. LLRW Disposition

a. Under no circumstance will material marked "radioactive" be disposed of as uncontrolled refuse for incineration or burial in unrestricted landfills.

b. All radioactive waste will be disposed of through the Navy Low-Level Radioactive Waste Disposal Program managed by NAVSEADET RASO.

c. Maintain a copy of the manifest for all LLRW transferred for disposal in the decommissioning file indefinitely.

d. Provide a copy of the LLRW manifest to the LRSO.

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

DOC IDENT	RI FROM	M&S	UI	QUANTITY	SERIAL	SUPPLEMENTARY ADDRESS	SIG	FUND	DISTRIBUTION	PROJECT	PRI	REQD DEL DATE	ADV	RI	O/P	COND	MGT	UNIT PRICE DOLLARS	UNIT PRICE CTS	1. TOTAL PRICE DOLLARS	CTS	2. SHIP FROM	3. SHIP TO
D7P			EA	XXXXX							13					F		37	18	37	18	UNIT UIC/ RUC	M67001 Base Safety IRSO

4. MARK FOR: LLRW

5. DOC DATE | 6. NMFC | 7. FRT RATE | 8. TYPE CARGO | 9. PS

10. QTY REC'D | 11. UP | 12. UNIT WEIGHT | 13. UNIT CUBE | 14. UFC | 15. SL

16. FREIGHT CLASSIFICATION NOMENCLATURE: K4222

17. ITEM NOMENCLATURE: COMPASS, MAGNETIC, UNMOUNTED, LENSATIC

18. TY CONT | 19. NO CONT | 20. TOTAL WEIGHT | 21. TOTAL CUBE

22. RECEIVED BY: IRSO, MCB CAMP LEJEUNE | 23. DATE RECEIVED

24. DOCUMENT NUMBER & SUFFIX (30-44): (Assigned by unit) XXXXXX-XXXX-XXXX

25. NATIONAL STOCK NO. & ADD (8-22): (Applicable Compass NSN) 6605-01-196-6977 or 6605-00-151-5337

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

27. ADDITIONAL DATA

Responsible Officer Name ____________________

Responsible Officer Signature ____________________

Date: ____________ Phone Number: ____________

(If no "Mark For Block" on form.)
MARK FOR: LOW LEVEL RADIOACTIVE WASTE

NOTE: Provide one copy for the IRSO and retain a copy in your unit files for a minimum of three years after the date of the turn-in.

PREVIOUS EDITION MAY BE USED

FormFlow (DLA)

Figure 4-1.—Example DD Form 1348, Issue Release/Receipt Document

Chapter 5

Procurement, Inventory and Reconciliation Procedures, Reports

1. Procurement. IRSO and LRSO approval is required prior to procuring radioactive material that contains radioactivity equal to or greater than the quantities listed in table 5-1, reference (e), or that contains a specific activity greater than 0.002 microcuries per gram. IRSO and LRSO approval is required prior to procuring machines that produce ionizing radiation (for example, X-ray machines) that are inherently accessible in the design or intended uses of the devices. CRSOs will ensure supply procedures are addressed in local radiation programs to assure IRSO/LRSO approval of the procurement of any item containing radioactive material or any radiation producing machines.

Table 5-1.--Exempt Quantities of Common Radioactive Materials

RADIONUCLIDE	ABBREVIATION	QUANTITY (μCi)
Barium-133	Ba-133	10
Cadmium-109	Cd-109	10
Carbon-14	C-14	100
Cesium-137	Cs-137	10
Cobalt-57	Co-57	100
Cobalt-60	Co-60	1
Hydrogen-3	H-3, Tritium	1,000
Nickel-63	Ni-63	10
Promethium-147	Pm-147	10
Strontium-90	Sr-90	0.1

2. Inventory

a. The IRSO, CRSO and RPA at all levels will maintain an inventory of all radioactive materials authorized by NRMPs, all non-exempt radioactive commodities and all X-ray equipment subject to the RASP under their control.

b. The owning unit RPA or RO will conduct the inventory and forward it to the CRSO for consolidation. The CRSO will review the inventory for accuracy and provide a copy to the II MEF CRSO. The consolidated inventories will then be reported to the inventory manager per the conditions of the appropriate NRMP or license or as directed by higher authority. A copy of all consolidated inventories will be provided to the IRSO.

c. MCB RPAs will conduct the inventory and forward it to the IRSO for consolidation.

d. For X-ray radiation producing machines subject to the RASP, the inventory will list machine description, model, serial number, maximum energy (peak tube potential, kVp) and filament current (milli-amperes, mA) or radiation output, location and the custodian.

e. An inventory will be conducted and maintained on all equipment, devices and check sources containing radioactive materials. The inventory will be conducted per the applicable NRMP or license. At a minimum, the inventories will be conducted as outlined in Table 5-2.

Table 5-2.--Inventory Schedule of Radioactive Materials

Item	Frequency	Submit To (Reference)
LLRW	Semi-Annually	RASO, (OPNAV NOTICE 5100)
CAM, ACADA,	Semi-Annually Due by: 15 March 15 September	-MSC to II MEF, II MEF to COMMARFORCOM -II MEF, copy to IRSO -MCB units to IRSO, to MCIEAST (Submit IAW SI-6665-15/1C, per Naval Message Traffic and NRMP 10-67004-T1NP.)
Tritium Devices	Semi-Annually Due by: 15 March 15 September	-MSC to II MEF, II MEF to COMMARFORCOM -II MEF, copy to IRSO -MCB units to IRSO, to MCIEAST (MCO 5104.3A, Material License 12-00722-06)
XRF Devices	Semi-Annually Due by: 15 June 15 December	-IRSO (NRMP 32-67001-J1NP)
Radiac's with RAM	Semi-Annually Due by: 15 June 15 December	-MSC to II MEF, II MEF to COMMARFORCOM -II MEF copy to IRSO -MCB units to IRSO, to MCIEAST (NRMP 08-00024-TN1P)
All other Devices	Semi-Annually Due by: 15 March 15 September	-MSC to II MEF, II MEF to COMMARFORCOM -II MEF copy to IRSO -MCB units to IRSO, to MCIEAST (MCO 5104.3A, Per NRMP or License)

f. Reconciled inventory reports, which include equipment losses and gains will be consolidated at the MEF and MSC level and reported to the inventory manager per the conditions of the appropriate NRMP.

3. Reconciliation Procedures

a. Before submitting inventories, quantity on hand, serial numbers, losses and gains, and the addition of new equipment will be reconciled with the previous inventory submitted.

b. Any adjustments to the inventory will require documentation to account for the change. Annotate on the effected inventory the reason for the change. The effected unit should maintain a copy of the supporting documentation with the inventory submitted for accountability purposes. Most supply documents are maintained for one year whereas documents involving radioactive materials are required to be maintained for a minimum of three years. Attaching a copy of the supporting documentation to the inventory maintained will assure the appropriate documents are maintained.

4. Reports

a. The requesting authority will provide the format for the inventory reports. In most cases an automated report format will be provided. The inventory will minimally contain the following:

(1) Owning unit and Reporting Unit Code (RUC).

(2) Nomenclature of equipment or source (ACADA, level vial).

(3) Source identification number (NSN, PN#).

(4) Equipment and source serial numbers.

(5) Radioisotope, chemical and physical forms.

(6) Activity with date of activity determination.

(7) Storage location (building number).

(8) Name of custodian with phone number.

b. All inventories will be maintained for a minimum of three years.

c. A copy of the inventories will be provided to the FESD to identify the location of radioactive materials aboard the Base. The FESD will only maintain the current inventory. Previous and duplicate inventories will be destroyed.

Chapter 6

Storage, Labeling, Posting and Control of Areas

1. Storage of Radioactive Materials

a. Radioactive materials will be stored in secure areas to prevent unauthorized removal or access.

b. When not in storage, control and constant surveillance of radioactive materials will be maintained at all times.

c. Radioactive materials will not be stored in office spaces, food storage areas or berthing areas.

d. Radioactive materials will not be stored in the same room or warehouse section with explosives or flammable materials.

e. The storage room will be free from flooding and adverse weather conditions.

f. Storage areas for tritium devices will be well ventilated.

g. Additional storage requirements may apply as addressed in the applicable NRMPs or licenses.

h. Quantities of radioactive material greater than those listed in Table 6-1 will be stored in a restricted area. Table 6-1 provides a list of common sources extracted from reference (e). Access will be limited to the responsible IRSO, CRSO, RPA and designated individuals. A roster of designated individuals will be maintained by the IRSO, CRSO, RPA, and at the storage site.

2. Labeling Requirements

a. All items containing radioactive material that exceed the quantities listed in Table 6-2 and 10 CFR Part 20 Appendix C, will be labeled.

b. The label will be clearly visible and bear the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL."

c. The standard radiation symbol will use the colors magenta, purple, or black on a yellow background, unless authorized by the NRC.

d. The symbol prescribed is the conventional three-bladed design. The crosshatched area will be black, purple, or magenta and the background yellow.

e. An exception to the color requirement is permitted when the materials are subjected to high temperatures. In this case the material may be marked with a conspicuously etched or stamped radiation caution symbol with no color requirement.

f. The label must provide sufficient information, such as the isotope, activity and date of estimated activity for individual handling or using the material to take appropriate precautions.

g. If the label is missing or illegible, it must be replaced.

h. Prior to removal or disposal of empty, uncontaminated containers to unrestricted areas, remove or deface the RAM label, or otherwise clearly indicate that the container no longer contains radioactive material.

Table 6-1.--Exempt Quantities of Common Radioactive Materials

RADIONUCLIDE	ABBREVIATION	QUANTITY (μCi)
Barium-133	Ba-133	10
Cadmium-109	Cd-109	10
Carbon-14	C-14	100
Cesium-137	Cs-137	10
Cobalt-57	Co-57	100
Cobalt-60	Co-60	1
Hydrogen-3	H-3, Tritium	1,000
Nickel-63	Ni-63	10
Promethium-147	Pm-147	10
Strontium-90	Sr-90	0.1

Table 6-2.--Quantities of Licensed Material Requiring Labeling

RADIONUCLIDE	ABBREVIATION	QUANTITY (μCi)
Barium-133	Ba-133	100
Cadmium-109	Cd-109	1
Carbon-14	C-14	100
Cesium-137	Cs-137	10
Cobalt-57	Co-57	100
Cobalt-60	Co-60	1
Hydrogen-3	H-3, Tritium	1,000
Nickel-63	Ni-63	100
Promethium-147	Pm-147	10
Strontium-90	Sr-90	0.1

3. Posting and Control of Areas

a. Each radiation area will be conspicuously posted with a sign or signs bearing the radiation symbol and the words "CAUTION-RADIATION AREA." Refer to 10 CFR 20.1902, NAVSEA RASP Manual for additional information regarding the posting of radiation areas, high-radiation areas, radioactive contaminated areas, and other restricted areas.

b. Each storage room or area where radioactive materials are handled in the amount exceeding 10 times the quantity of such material as specified in Appendix C, Part 20 of reference (c) will post a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)" or "DANGER, RADIOACTIVE MATERIAL(S)." All entrances into the area or room will be posted. Table 6-3 provides a listing of the quantities of common radionuclides that require posting.

c. Additional posting requirements are outlined in reference (h). These are specific for fire control instruments, infantry and artillery devices containing tritium. Areas where these devices are stored will be marked with signs that contain the following statement: "Caution-Radioactive Material-NRC License 12-00722-06 and USMC TI-5104-15/2 Apply."

d. Exceptions to posting requirements are found in 10 CFR 20.1903.

Table 6-3.--Quantities of Licensed Material Requiring Posting

RADIONUCLIDE	ABBREVIATION	QUANTITY (μCi)
Barium-133	Ba-133	1,000
Cadmium-109	Cd-109	10
Carbon-14	C-14	1,000
Cesium-137	Cs-137	100
Cobalt-57	Co-57	1,000
Cobalt-60	Co-60	10
Hydrogen-3	H-3, Tritium	10,000
Nickel-63	Ni-63	1,000
Promethium-147	Pm-147	100
Strontium-90	Sr-90	1

e. In addition, the following documents will be conspicuously posted in areas of accessibility where radioactive material(s) or machine-generated sources of radiation are located and/or utilized:

(1) The most current version of NRC Form 3, Notice to Employees. A current copy of the NRC Form 3 can be downloaded from the RADCON website at http://www.logcom.usmc.mil/radcon or obtained from the Installation Radiation Safety Office.

(2) Section 206 of the Energy Reorganization Act of 1974, which is provided in figure 6-1.

(3) Emergency procedures for the operations conducted in the area of concern. An example of emergency procedures is provided in figure 6-2.

(4) A placard stating "NO EATING, DRINKING, SMOKING" in areas where radioactive material is stored or used. An example of the placard is provided in figure 6-3.

(5) Applicable NRC Licenses.

(6) Applicable Naval Radioactive Materials Permits.

(7) Title 10 of Code of Federal Regulations, Parts 19, 20, 21, 31 and 71.

(8) Title 49 Code of Federal Regulations, parts 171-180.

(9) DOD 4500.9-R Defense Transportation Regulation.

f. In lieu of posting the larger sized references at the entrance, a placard that identifies the location of these references or how to access them is authorized. The applicable references that may be listed on this posting are references 5 through 9 of paragraph (e) in this section. An example of the placard is provided in figure 6-4.

SECTION 206, ENERGY REORGANIZATION ACT 1974

NONCOMPLIANCE

Sec. 206.

(a) Any individual director or responsible officer of a firm constructing, owning, operating, or supplying the components of any facility, or activity which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954 as amended, or pursuant to this Act, who obtains information reasonably indicating that such facility or activity or basic components supplied to such facility or activity-

(1) Fails to comply with the Atomic Energy Act of 1954, as amended, or any applicable rule, regulation, order, or license of the Commission relating to substantial safety hazards, or

(2) Contains a defect which could create a substantial safety hazard, as defined by regulations which the Commission shall promulgate; shall immediately notify the Commission of such failure to comply, or of such defect, unless such person has actual knowledge that the Commission has been adequately informed of such defect or failure to comply.

(b) Any person who knowingly and consciously fails to provide the notice required by subsection (a) of this section shall be subject to a civil penalty in an amount equal to the amount provided by section 234 of the Atomic Energy Act of 1954, as amended.

(c) The requirements of this section shall be prominently posted on the premises of any facility licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended.

(d) The Commission is authorized to conduct such reasonable inspections and other enforcement activities as needed to insure compliance with the provisions of this section.

Figure 6-1.--Section 206 of the Energy Reorganization Act Of 1974

Radiological Emergency Actions and Procedures
(Unit, Department, Location)

1. Emergencies involving radioactive materials will generally be in the form of a spill or leak due to damaged packaging, equipment or in the form of a fire in an area containing radioactive material. Priorities for rescue, life saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels. The type of radiation expected in this facility presents minimal risk due to low levels of contained radioactive materials and low radiation levels outside packages result in low risks to people. In the event of an emergency involving radioactive material, the following procedures will be administered:

a. Radiological Emergencies Involving Fire. The presence of radioactive material will not influence the fire control process and should not influence selection of techniques.

(1) Immediately **notify** the Fire and Emergency Services Division by activating a Fire Alarm Pull Box and calling 911. The location of the Fire Alarm Pull Boxes and available telephones are provided on the Emergency Evacuation Plan (EAP). *(Recommend you list the specific locations or post the EAP with these procedures.)*

(2) Immediately **alert** individuals in the area of the emergency and begin **evacuation** assisting any persons subject to injury.

(3) **Muster** outside in the designated area as described on the Emergency Evacuation Plan. If the muster area is located down wind of the fire, move to a new area upwind of the fire to prevent exposure to possibly contaminated smoke. *(Recommend listing the specific muster location along with the alternate location or post the EAP with these procedures and include the alternate location.)*

(4) The Radiation Protection Assistant (RPA) or supervisor will inform the responding fire captain that radioactive materials are involved along with the type and quantity of radioactive materials involved.

(5) The On-Scene commander will take charge of the situation and determine what follow-up actions are required.

(6) The RPA or supervisor will notify the Installation Radiation Safety Officer of the radiological incident and initiate the Incident Reporting Worksheet.

Figure 6-2.--Example, Radiological Emergency Actions and Procedures

b. Radiological Emergencies Involving a Spill or Leak. The severity of the spill or leak is dependent upon the type and amount of radioactive material released. Generally, small releases can be contained and cleaned up by the individuals involved if properly trained. Possible releases that may occur in a facility consist of damage to equipment, containers or packaging of items containing radioactive materials due to mishandling. If contamination is possible, it will be treated as such until proven otherwise. *(Address all types of possible releases that may occur within your facility or operation.)*

(1) Do not touch damaged packages, equipment or released material.

(2) Notify personnel, evacuate the immediate area and prevent unauthorized personnel from accessing the area of the release.

(3) Personnel who may have received possible contamination on bare skin should wash with a mild soap and plenty of tepid water and report to the local medical facility for evaluation.

(4) Immediately notify the RPA or CRSO to evaluate the situation and make the determination if there is a possibility that contamination is present.

(5) As the situation dictates or if the RPA or CRSO is not available, contact the Fire and Emergency Services Division who is responsible for radiation emergency response by calling 911 and informing the Dispatcher that radioactive materials are involved.

(6) **Only authorized personnel** will handle and work with the items suspected of radioactive contamination.

(7) When possible contamination is present, a survey of the area is required. Use applicable radiation detectors for the type of material released. (List the type of detectors on hand and the application.) For radioisotopes not detectable using standard radiation detectors, a Wipe Test of the area will be required.

(8) Prevent the spread of possible contamination by using disposable rubber gloves and by placing the suspected item in double plastic bags or by covering the item or area with plastic. All PPE used during this process will be placed in a plastic bag and labeled as "Radioactive Waste" and stored with the item.

Figure 6-2.--Example, Radiological Emergency Actions and Procedures--Continued

(9) Seal the plastic bag with tape and label it with the following, "Caution-Possible Radioactive Contamination," the date and the point of contact.

(10) Items requiring a wipe test will be moved to the designated area until the test results are received. Areas requiring Wipe Tests will remain covered and cordoned off with cones or tape until the Wipe Test results are received.

(11) Contact the CRSO or IRSO for assistance in conducting Wipe Tests.

(12) For contaminated areas or items, establish alternate work operations to avoid contact until the items or area are decontaminated, properly disposed of or turned over to the Low Level Radioactive Waste (LLRW) Site Manager.

(13) The RPA or supervisor will complete a User Incident Report and submit it to the CRSO and IRSO.

2. Point of Contacts

a. Radiation Protection Assistant (the name of the locally assigned individual with the contact number):

b. Command Radiation Safety Office (the name of the higher command radiation safety officer with the contact number):

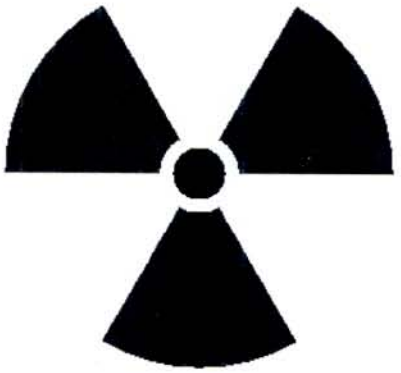
c. Installation Radiation Safety Officer (the names of the Base radiation safety officers with contact numbers):

Figure 6-2.--Example, Radiological Emergency Actions and Procedures--Continued

CAUTION

DESIGNATED AREA FOR THE HANDLING AND STORAGE OF RADIOACTIVE MATERIAL

SURFACES AND ITEMS IN THIS AREA MAY BE CONTAMINATED



NO EATING
NO DRINKING
NO CHEWING
NO SMOKING
NO APPLYING MAKEUP

Figure 6-3.--Caution Placard for Radioactive Material Storage Rooms and Areas of Use

NOTICE

The documents listed below are available for review at _____ and at the office of the Radiation Protection Assistant (RPA), Command Radiation Safety Office (CRSO), Installation Radiation Safety Office (IRSO), or can be accessed at the RADCON website (http://www.logcom.usmc.mil/radcon):

- NRC Material License 12-00722-06, for equipment containing Tritium (H-3) sources.
- NRC Material License 12-01022-14, for Night Vision Equipment containing Thorium -232 Fluoride (ThF4) coated lenses.
- Navy Radioactive Materials Permit 10-67004-T1NP, for the Chemical Agent Monitor (CAM) and Automatic Chemical Agent Detection Alarm (ACADA)
- Navy Radioactive Materials Permit 32-67001-J1NP, for XRF Devices
- OPNAVINST 6470.3, Naval Radiation Safety Committee.
- NAVMED P-5055, Radiation Health Protection Manual.
- NAVSEA S0420-AA-RAD-010, Radiological Affairs Support Program Manual
- MCO 5104.3A, Marine Corps Radiation Safety Program
- OPNAVINST 3100.6 Special Incident Reporting

The documents listed below are available for review at the Installation Radiation Safety Office or via the Internet:

- www.nrc.gov, Title 10 Code of Federal Regulations, Parts 19, 20, 21, 31 & 71
- www.dot.gov, Title 49 Code of Federal Regulations, Parts 171-180
- http://www.transcom.mil/j5/pt/dtr.html, Defense Transportation Regulation, (DOT)DoD 4500.9-R

For additional information, contact your local RPA _____at _____, CRSO _____ at _____ or the IRSO_____ at_____.

Figure 6-4.--Posting the Location of Required Documents for RAM Storage Rooms and Areas of Use

Chapter 7

Leak/Wipe Test Procedures and Results

1. General

a. A Leak/Wipe is a sample wipe test taken from the device to determine if a sealed source or instrument has lost its integrity by allowing leakage of radioactive material through holes or cracks. Tests are normally performed using a filter paper or absorbent material to wipe the source or instrument; the paper or matter is then evaluated to determine the presence of radioactive contamination, which indicates a leakage.

b. The difference between a Leak Test and Wipe Test is that a Leak Test is performed to determine the integrity of a sealed source, and a Wipe Test is used to determine if contamination is present during a survey or an incident.

c. Proper Leak/Wipe Test procedures are essential to ensure for valid test results and to protect personnel from exposure to radiation.

d. When submitting a Leak/Wipe Test, submit a request letter along with the sample. The letter will provide contact information, the suspected isotope(s), a list of the samples submitted by sample serial number and any additional information that would be pertinent to the testing. An example Leak Test request letter is provided in figure 7-1.

e. Equipment containing radioactive material in most cases will have procedures outlined in the equipment manuals, Material License or NRMP on how to conduct the Leak/Wipe Tests. In this case those procedures will be followed.

f. In situations not related to equipment where specific procedures are not outlined, the procedures provided in this chapter will be used.

2. Leak Test Requirements. Leak tests are required at scheduled intervals or when a suspected leakage has occurred. Leak testing requirements are as follows:

a. Sealed sources containing more than 100 micro curies of beta-gamma emitting material or more than 10 micro curies of

alpha emitting materials will be tested for leakage or contamination at intervals not to exceed six months, except in the following cases.

(1) Hydrogen-3, other gaseous-form radioactive isotopes, and radioactive isotopes with half-lives less than 30 days are exempt from the periodic leak test requirement. This exception does not apply when fourth echelon maintenance is performed to replace vials when a suspected leakage has occurred. In this case, a Wipe Test is completed prior to performing the maintenance.

(2) Leak test intervals exceeding six months are allowed if approved in a specific or general NRC license or an NRMP.

(3) Any source in storage not being used is exempt from the periodic leak test requirement. When the source is removed from storage, it will be leak tested prior to use or transfer.

b. Any source received by the command that requires a leak test and is not accompanied by a certificate indicating that a test was performed within six months prior to the transfer will not be put into use until tested.

c. The test sample(s) will be taken from the source or adjacent surface(s) where contamination is expected to accumulate. Specific sampling locations and procedures will be used when instructions are provided in the license, permit, published instructions or equipment manuals.

d. The leak test will be capable of measuring 0.005 micro curies of radioactivity.

e. If 0.005 micro curies or more of removable contamination is measured on the test sample(s), the actions below will be taken:

(1) The source will be removed from service, decontaminated, repaired or transferred for disposal. The source may be returned to the manufacturer when so stated on the label on the device or when incorporated into the specific license governing it.

(2) A complete investigation of the source and extent of contamination will be conducted.

(3) Comply with the notification requirements of Chapter 1, reference (e), applicable NRMPs, or NRC licenses.

f. Leak test records should be maintained with the equipment record jackets and will be retained for a minimum of three years.

g. Leak test results will be maintained in units of micro curies or disintegrations per minute (dpm).

h. Leak tests will be submitted to the following address unless otherwise directed in the license or NRMP:

Commander, Marine Corps Logistics Command
Attn: Radiochemistry Lab
Radiological Controls Office (RADCON)
814 Radford Blvd Suite 20348
Albany, GA 37104-0348

3. Leak/Wipe Test Kit. All units storing or handling applicable radioactive sources will maintain leak test kits for their use. Leak test kits should include:

a. Swipes (wet), Metricel Membrane Filters. NSN 6640-01-142-8317, or part number 63069.

b. Test swipes (dry), NSN 6665-01-198-7573.

c. Bag, Plastic, Interlocking Seal.

d. Gloves, Rubber, Disposable.

e. Scintillation Vials, NSN 6640-01-141-3871 (wet wipes).

f. Envelope, Mailing 3 3/8 x 8 7/8.

g. Envelope, Mailing 4 1/8 x 9 1/2.

h. Pen, Ball Point.

i. Tape, Pressure Sensitive.

j. Labels, Mailing.

k. Marker, Permanent.

4. Leak/Wipe Test Procedures: Tritium Devices

a. Tritium oxide contamination is difficult to detect. There are currently no portable radiac detectors in the Marine Corps that can detect the low energy beta emissions of tritium. A Wipe Test must be taken and the wipe sample analyzed using a Liquid Scintillation Counter to detect the presence of tritium.

b. Damaged tritium devices will be wipe tested by the unit RPA, CRSO or IRSO as applicable, when tritium sources have been compromised during handling.

c. Routine Wipe Tests will be conducted per the applicable license or NRMP.

d. Leak/Wipe Test Procedures:

(1) Facility survey wipes require a diagram of the area to be tested. Information on the diagram should include the unit's name, name of person conducting the wipe test, date, phone number, building number and the location where each wipe sample was taken. Label the samples submitted numerically to match the locations annotated on the diagram. Attach a copy of the diagram to the Wipe Test results.

(2) Equipment wipes require the nomenclature of the device, serial number, the unit's name, name of person conducting the wipe test, date and a point of contact phone number.

(3) Prepare the labels by annotating on them the unit, name of person conducting wipes, date wipes taken, isotope testing for, and the serial number assigned to them.

(4) Attach the labels to the plastic self-locking bags.

(5) Put on rubber gloves. Ensure you have enough gloves to conduct the wipe test. You should use new gloves for each wipe taken to prevent cross contamination.

(6) Moisten the test filter with water taken from outside the area.

(7) Wipe an area approximately four inches square (100 sq cm). Use light to medium pressure on the filter and surface to collect the sample. The filter is delicate and will tear easily.

(8) Place the filter in the scintillation vial. Do not put the paper backing that comes with the filter in the vial. If the vials are not available, a small plastic self- locking bag may be used.

(9) Put one milliliter of water in the vial. This is about 20 drops of water. The added water is to keep the filter moist during shipping and must be taken from outside the area.

(10) Put the cap on the vial and shake it gently to thoroughly moisten the filter.

(11) Mark the lid of the scintillation vial in permanent marker with the sample serial number to identify where on the map it was taken from. MARK ONLY ON THE LID - DO NOT WRITE OR MARK THE SIDES OF THE VIAL.

(12) Once all samples have been taken, remove rubber gloves and wash hands thoroughly with non-abrasive soap and warm water.

(13) Place the vials in the appropriate plastic bag and seal. Place all sealed vials in an additional large plastic bag and seal.

(14) Place the vials, diagram and Wipe Test request letter in the envelope and seal with tape.

(15) Submit the envelope for sampling. Maintain a copy of the mailing/shipping paperwork to track the status of the envelope.

(16) Retain results of facility Wipe Tests indefinitely. Provide a copy to the CRSO and IRSO for the Decommissioning Files. Retain all other results for a minimum of three years.

5. Leak/Wipe Test Procedures: Chemical Agent Monitors (CAM) and Automatic Chemical Agent Detector Alarms (ACADA)

a. Leak Test procedures for CAMs and ACADAs are found in the U.S. Marine Corps Supply Instruction SI 6665-15/1 and NRMP 10-67004-T1NP.

b. Wipe tests will be completed and submitted as directed in NRMP 10-67004-T1NP.

c. Wipe tests will be performed under the following conditions:

(1) When the item is damaged to the point that source leakage is a possibility.

(2) After completion of intermediate or depot level maintenance involving disassembly of the source module such as removal or replacement of the source or source membrane.

d. Maintain the results of the wipe test with the equipment record jacket for a minimum of three years.

6. Leak/Wipe Test Procedures: ADP 2000

a. Leak tests for the ADP 2000 leak will be conducted per the Radioactive Materials General License.

b. Leak tests are required to be performed on a six month interval.

c. Maintain copies of the leak test results with the equipment record jacket and provide a copy to the IRSO.

d. When conducting the wipe test, wipe the exterior area around the nozzle using a dry filter.

e. Wipe tests will be conducted when the ADP 2000 is damaged to the point that source leakage is a possibility.

f. The general requirements described in paragraph 2, will be followed when conducting and submitting leak/wipe tests for analysis.

UNITED STATES MARINE CORPS
MARINE CORPS BASE
PSC BOX 20004
CAMP LEJEUNE, NORTH CAROLINA 28542-0004

N REPLY REFER TO
5104
Unit/Sect
Date

From: Commanding Officer/OIC/Director
To: Radiochemistry Lab Technician, Radiological Controls Office, 814 Radford Boulevard Suite 20348, Albany GA 31704-0348

Subj: LEAK/WIPE TEST REQUEST, (LIST EQUIPMENT OR TYPE OF REQUEST, i.e., ACADA, FACILITY, RADIOLOGICAL INCIDIENT)

Ref: (a) NAVSEA TM S0420-AA-RAD-010
(b) MCO 5104.3A
(c) (LIST APPLICABLE LICENSE OR NRMP)

1. Per references (a) through (c), the following Leak Test samples are submitted for analysis. The samples were taken on 15 January 2007 and are from ADP 2000's assigned to MCB Camp Lejeune. The ADP 2000 contains a 10 mCi, Ni-63 source.

a. Sample 001: ADP 2000 SN# xxxx
b. Sample 002: ADP 2000 SN# xxxx
c. Sample 003: ADP 2000 SN# xxxx

2. Please return the results by fax or email. The fax number is (910) 451-xxxx, or email address: xxxxx@usmc.mil.

3. Point of contact is XXXXXXXXXX, Command Radiation Safety Officer/Radiation Protection Assistant/Installation Radiation Safety Officer at DSN 751-xxxx or Commercial (910) 451-xxxx.

I. M. INCHARGE

Figure 7-1:--Example Leak/Wipe Test Request Letter

Chapter 8

Procedures for Shipment, Receipt and Opening Packages

1. General. References (a), (c) and (e) provide guidelines for shipping, receipt, and opening packages containing radioactive materials. The following amplifying information is provided to ensure compliance with current regulations.

a. Each activity responsible for the shipment, receipt and opening of packages containing radioactive materials will establish written procedures for safely performing these operations. The written procedures will address the actions involved when handling radioactive materials and will include emergency procedures, points of contact and possible hazards associated with shipments containing radioactive materials. The procedures will address the type of packages handled and the chemical and physical forms of the contents. General procedures that are provided in commodity NRMPs should be included in local procedures if the command receives, ships, or transports licensed or permitted commodities. Provide a copy of the written procedures to the applicable CRSO and the IRSO.

b. Each command expecting receipt of a package containing radioactive materials will comply with the requirements of 10 CFR 20.1906 for notification, pickup, and monitoring. Alternatively, commands will comply with NRMPs that provide approved shipping and receipt instructions for certain commodities and radioactive materials.

c. All records of shipment and receipt of equipment containing radioactive materials to include DD Form 1348, DD Form 1149 and Bills of Lading, will be retained for as long as the material is possessed and for three years following the transfer or disposal of the item.

d. When required, the monitoring for external radiation and contamination on external surfaces of packages received or packaged for shipment will be carried out near the receiving or packaging point.

2. Shipment

a. The owning unit will inspect for source integrity all items being prepared for packaging and shipment. Illumination

checks and leak tests will be conducted as required by the NRMP or License. The results of the inspection will be annotated on a Radioactive Material (RAM) Movement Form provided in figure 8-1 and will accompany all shipments.

b. Prior to submitting the item for packaging and shipment, all equipment containing radioactive materials will be inspected by the IRSO, AIRSO or designated RPA for damage and for proper completion of the shipping documents. For authorization to ship packages with radioactive material, the shipper is required to provide the following documents along with the equipment for inspection and approval:

(1) A RAM Movement Form, completed by the owning unit. An example of the form is provided in figure 8-1.

(2) Material Safety Data Sheet (MSDS).

(3) Disposition instructions or shipping instructions, authorizing or directing the shipment or transfer of the equipment containing radioactive materials.

(4) DD Form 1348, Issue Release/Receipt Document or DD Form 1149, Requisition and Invoice/Shipping Document.

(5) MCBCL 4030, Packaging and Preservation Work Request.

(6) Leak test certificate as applicable.

c. Upon completion of the inspection by the IRSO, AIRSO or designated RPA, a letter authorizing the shipment will be provided. An example of the authorization letter is provided in figure 8-2.

d. Packaging the items for shipment will be coordinated through the Hazardous Material Section of Preservation, Packaging & Packing, 2d Supply Battalion, 2d Marine Logistics Group (MLG).

e. The proper packaging, labeling, and other tasks associated with the shipment of radioactive materials are complex and dependent on form, quantity, and isotope of the radioactive materials to be moved. Regulations concerning the shipment of radioactive materials are provided in 49 CFR 170-199 and 10 CFR 71.

f. The shipping activity will verify consignee authorization to receive the radioactive material. This consists of an NRC or state license for commercial firms or a NRMP for Navy and Marine Corps commands as required by 10 CFR 30.41.

3. Receipt of Materials

a. To the maximum extent possible, all materials will be received in a single location and stored in the designated area as identified by radiation caution signs. The designated storage area will be identified on the facilities emergency evacuation plan and a copy provided to the FESD.

b. Only designated and qualified personnel will receive or handle radioactive materials.

c. **Do not accept** or receipt for radioactive materials that one is not authorized to possess. Contact the shipper to verify if the package was properly shipped. Contact the responsible RPA, CRSO or IRSO for further assistance.

d. Activities that expect to receive packages containing more than Type A quantities, as listed in Appendix A of 10 CFR 71.4 or as listed in 49 CFR 173.435, will make arrangements to receive the package when it is offered for delivery by the carrier or to be notified by the carrier when a package arrives at the carrier's terminal and to pick up the package as soon as possible after notification.

e. All packages containing radioactive material will be inspected as soon as possible after receipt. When the package shows signs of damage (crushed, wet, or visible damage), the vehicle will be monitored for contamination. Contact the IRSO for assistance. The vehicle will not be released until contamination is reduced below the level specified in 49 CFR 173.443.

f. Shipments will be examined to determine if there is any leakage from the contents or apparent damage. If damage or leakage is suspected, the package will not be moved or further handled. Immediately carry out the local emergency procedures regarding radioactive materials. This will include notifying FESD by calling 911 and notifying the IRSO. The on-scene commander or IRSO will direct further actions.

g. Shipping documents will be examined to ensure they are properly prepared per Navy, NRC, and DOT requirements.

h. All records of receipt of equipment containing radioactive materials will be retained for as long as the material is in one's possession and for a minimum of three years following the transfer or disposal of the item. These records should be maintained separately from non-radioactive material receipts due to the difference in the requirement for retaining them.

4. Receipt Surveys. Receipt surveys will be conducted on packages containing radioactive materials as required for removable external surface contamination within three hours if received during working hours, or not later than three hours from the beginning of the next working day if it is received after normal working hours. The following conditions apply when receiving shipments containing radioactive material:

a. Monitor the external surfaces of packages for radioactive contamination that contain quantities of radioactive material that are greater than the Type A quantity as defined in 10 CFR 71.4 and listed in Appendix A to 10 CFR 71. Type A quantities are also listed in 49 CFR 173.435. If one is expecting to receive packages that exceed Type A quantities, you will notify the IRSO prior to receipt.

b. Monitor all packages containing radioactive materials for radioactive contamination and radiation levels if there is evidence of degradation of the package integrity, such as packages that are crushed, wet, or damaged.

c. Packages containing only radioactive material in the form of a gas or in special form as defined in 10 CFR 71.4 are exempt from the receipt monitoring.

d. If removable radioactive contamination exceeds 0.01 micro curies per 100 square centimeters of package surface, segregate the package and notify the IRSO immediately.

5. Opening Packages

a. Written procedures will be established for monitoring and safely opening packages received containing radioactive materials.

b. Consideration will be given to the type of package being opened and the chemical and physical forms of the contents.

c. General procedures that are provided in commodity NRMP's or material licenses will be included in local procedures.

d. Only personnel properly trained to handle radioactive materials are authorized to open packages that contain radioactive materials.

UNITED STATES MARINE CORPS
RADIOACTIVE MATERIAL (RAM) MOVEMENT FORM

1. MOVEMENT TYPE	2. DOCUMENT NUMBER:
☐ SHIPMENT/TRANSFER ☐ RECEIPT	USMC -
3. CONSIGNER: (Originating Unit)	4. CONSIGNEE: (Intended Recipient)

5. COMMODITY DESCRIPTION

Qty	NSN	Nomenclature	Serial No.	Isotope	Activity	Total Activity

6. MODE OF SHIPMENT	7. PHYSICAL CHARACTERISTICS		8. RADIATION SURVERY RESULTS (if required)		
☐ Air	☐ Special Form	☐ Solid	Instrument Used:		
☐ Truck	☐ Normal Form	☐ Liquid	Calibration Due:	SN:	
☐ Rail		☐ Gas	Transport Index:		
☐ Water			Surface:	mrad/hr:	µGy/hr
☐ Parcel Post			One Meter:	mrad/hr:	µGy/hr
☐ Other			Background:	mrad/hr:	µGy/hr

9. PRE-SHIPMENT WIPE TEST/ILLUMINATION TEST RESULTS

Wipe/Inspection Performed by:	Wipe Counted by:	Result: ◯ SAT ◯ UNSAT
		Removal:
Date:	Date:	MDA: µCi Bq

10. RECEIPT INSPECTION RESULTS

Inspection Result: ◯ SAT ◯ UNSAT	Receipt Inspection:
Note: IF UNSAT, Wipe test shall be performed and results entered in Block 9 above.	Performed by:
	Date:

11. BASIC DESCRIPTION

☐ Radioactive Material, Excepted Package Instruments & Articles, 7, UN 2911	☐ Radioactive Material, Excepted Package Empty Packaging, 7, UN 2908
☐ Radioactive Material, Excepted Package Limited Quantity of Material, 7, UN 2910	☐ Radioactive Material, Special Form, n.o.s., 7, UN 2974
☐ Radioactive Material, Excepted Package Articles Manufactured from Natural or Depleted Uranium or Thorium, 7, UN 2909	☐ Radioactive Material, Low Specific Activity, LSA-I, n.o.s., 7, UN 2912
	☐ Radioactive Material, Fissile, n.o.s., 7, UN 2918

12. Labeling	13. Marketing		14. Shipping Papers
☐ White I	☐ Radioactive	☐ Exempt	☐ Included & Complete
☐ Yellow II	☐ Radioactive LSA		☐ Exempt
☐ Yellow III	☐ Waste Class A, B, C		
☐ Exempt	☐ Other		

15. CERTIFICATION:
"THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49 CFR 173.424 FOR RADIOACTIVE MATERIALS, EXCEPTED PACKAGE - INSTRUMENTS OR ARTICLES, UN2911"

16. INCIDENT/ACCIDENT NOTIFICATION: 24 HOUR EMERGENCY RESPONSE PHONE NUMBER: 911

POC:	Phone Number	ALTERNATE RCO POC:	Phone Number
COMMENTS:			

17. Printed Name of Certifying Official:	18. Signature:	19. Date

The printed name and signature of the individual certifying the information on this form is correct and appropriate disposition/authorization to ship or transfer the device has been obtained.

MCBCL/SAFETY/5104.1/3 (1/10) PREVIOUS EDITIONS ARE OBSOLETE ADOBE 8.0

Figure 8-1. -- RAM Movement Form

Instructions for completing the USMC RAM Movement Form (Form is completed by the originating unit):

Block 1. This is the evolution for which the form is being generated. Only one of these options should be selected.

Block2. This is a unique tracking number and is locally generated by the command initiating the movement.

Suggested format: USMC-M67004-01-001

This format identifies the agency, the Unit AAC, the year, and the movement number. The year rolls forward on January 1st, the movement number resets to 001.

Block 3. This block contains the name and address and of the unit that is offering the item for shipment or transfer. (This unit will show a decrease in their RAM inventory as a result of the transaction.)

Block 4. This block contains the name and address of the location intended to be the final destination of the item being shipped or transferred. (This unit will show an increase in their RAM inventory as a result of the transaction.)

Block 5. This is specific information related to the device being shipped or transferred. All blocks are to be completed as accurately as possible.

Block 6. The specific mode of transport should be checked.

Block 7. This information can typically be found in equipment technical manuals. **To determine specific characteristics, a good rule of thumb is that devices containing H-3 will usually be Normal Form, Gas; devices containing Ni-63 are Normal Form, Solid; and devices containing Am-241 are Special Form, Solid.**

Block 8. Radiation surveys generally do not apply for USMC devices. For guidance concerning the necessity of acquiring radiation survey data, contact the USMC Radiological Controls Office at DSN 567-5511.

Block 9/10. Completion of these blocks is mandatory. See guidance for conducting pre-shipment and receipt inspections as provided on the Radiological Controls website at http://www.ala.usmc.mil/radcon/. Complete only the blocks for the type inspection performed, blocks not used should be left blank.

Block 11. This is a general description of the device and is the basis for claiming applicable exemptions from marking and labeling of the shipping package. Almost all USMC packages fall into the first category, **Radioactive Material, Excepted Package - Instruments and Articles, 7, UN 2911.**

Block 12. Marked as "Exempt" unless otherwise directed by the local Transportation Officer or the RCO.

Block 13. Marked as "Exempt" unless otherwise directed by the local Transportation Officer or the RCO.

Block 14. Marked as "Exempt" for on-site transfers. For off-site transfers requiring a shipping manifest and bill of lading, contact the local Transportation Officer for guidance and ensure the "Included & Complete" option is checked.

Block 15. If package certification is based on selecting "Instruments and Articles" as described in the Block 11 instructions above, this statement should read: **"THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49 CFR 173.424 FOR RADIOACTIVE MATERIALS, EXCEPTED PACKAGE - INSTRUMENTS OR ARTICLES, UN2911".** If a package is shipped under a different basic description, the certifying statement must be changed in accordance with 49 CFR 173.422(a).

Block 16. This information must be provided. It should include a local POC and contact phone number as a minimum. The RCO should be identified in the comments section as an alternative POC in the event the originating CRSO/IRSO cannot be reached.

Block 17. The printed name of the individual certifying the information on the form is correct and appropriate disposition/authorization to ship or transfer the device has been obtained.

Block 18. The signature of the individual certifying the information on the form is correct and appropriate disposition/authorization to ship or transfer the device has been obtained.

Block 19. The date Block 18 is signed.

Figure 8-1. -- RAM Movement Form

Authorization to Ship Radioactive Materials

1. ITEM: _____

QTY: _____

SER: _____

NSN: _____

2. Disposition Instructions received?	YES __	NO __
3. Disposition Instructions followed?	YES __	NO __
4. Information in 1348-1 and 4030 complete?	YES __	NO __
5. USMC Radiation Movement Form complete?	YES __	NO __
6. Material Safety Data Sheet provided?	YES __	NO __
7. Is the item broken or leaking?	YES __	NO __
8. If yes, has the message been forwarded as required?	YES __	NO __
9. Has item been leak tested?	YES __	NO __

Special instructions to PP&P:

"This package conforms to the conditions and limitations specified in 49 CFR 173.424 for radioactive material, excepted package-instruments or articles, UN2911".

Shipped under DOC# _____

* Ensure new packing material is used and that the equipment is protected from damage during shipment.

* Ensure shipments containing radioactive materials are accounted for at all times and are secured to prevent unauthorized access.

Remarks:

_____ _____ _____

Authorizing IRSO or AIRSO (Print Name) | Authorizing IRSO or AIRSO (Sign Name) | Date

Installation Radiation Safety Officer (IRSO)
Marine Corps Base
Camp Lejeune, NC 28542

(910) 451-7449

Assistant Installation Radiation Safety Officer (AIRSO)
Marine Corps Base
Camp Lejeune, NC 28542

(910) 451-5932

MCBCL/SAFETY/5104.1/2 (REV 2/11) PREVIOUS EDITIONS ARE OBSOLETE ADOBE 8.0

Figure 8-2. -- Authorization to Ship Radioactive Material

Chapter 9

Radiation Emergency Procedures

1. General. The purpose of establishing radiation emergency procedures is to minimize the radiation exposure of personnel, minimize the spread of contamination and maintain accountability and control of radioactive materials. The majority of radioactive materials aboard the Installation consists of radioactive commodities or equipment containing radioactive sources. The sources found in these items present a low-level radiation hazard and minimal risk to personnel. Emergency procedures will address the hazards and required actions as related to the sources involved.

a. Radiation emergency procedures will be established by all activities and facilities that possess, receive, ship, use or store radioactive materials. These procedures will be specific to the operations of that facility. An example of a radiation emergency procedure is provided in Chapter 6, figure 6-2.

b. The radiation emergency procedures will describe what actions to take during an emergency involving radioactive materials based on all possible emergencies. At a minimum, the emergency procedures will include:

(1) What conditions constitute a radiation emergency.

(2) List by priority, individuals and departments to be notified (primary and alternates) during and after normal working hours.

(3) What possible radioactive hazards are present or in the general area.

(4) What actions are to be taken for each type of radioactive emergency depending on the radioisotope present to control the exposure.

(5) Who is authorized to declare the area safe for re-entry to resume operations.

(6) What follow-up actions, if any, are required.

c. When establishing radiation emergency procedures, the following conditions, situations and occurrences will be considered:

(1) Real or suspected personnel overexposure.

(2) Personnel contamination.

(3) Unauthorized or accidental entry of personnel into controlled areas.

(4) Spills of radioactive material.

(5) Theft or loss of radioactive material or machines that produce ionizing radiation.

(6) Unplanned release of radioactive material in the environment.

(7) Receipt of packages with excessive contamination or radiation levels.

(8) Failure of safety devices to function properly, such as interlocks not terminating exposure.

(9) Failure of exposure or radioactive device components to function properly.

(10) Discharges or spills of material or fluids that might be considered pollutants which endanger critical water areas, have the potential to generate public concern, become the focus of enforcement action, or pose a threat to public health or welfare.

(11) Events involving radioactive material or radiation exposure which do not present a hazard to life, health, or property, but which are of such nature as to warrant immediate notification of cognizant higher command.

(12) Incineration of radioactive materials.

(13) Violations of operating procedures required by the NRMP or an NRC license.

d. Training, conducted prior to working in the area, will be conducted and documented for all affected personnel on the established radiation emergency procedures. Refresher training will be conducted annually and when changes are made to the procedures or conditions.

e. Emergency procedures will be reviewed and updated at least annually.

f. An exercise of the emergency procedures will be conducted at least annually under realistic conditions.

g. During radiation emergencies, actions to preserve life, aid the injured, fight fires and control further spread of damage should take precedence over the concerns for radiological contamination that may arise from fielded Marine Corps equipment.

2. General Emergency Procedures. The following emergency procedures will be incorporated into written emergency operating procedures. Emergencies will generally be in the nature of spills, fires, or explosions, which could cause release or dispersal of radioactive material over surfaces, in the air, soil, or water. In case of emergency, the following procedures will be followed:

a. Attempt to extinguish the fire if present and eliminate any significant radiation hazards, i.e., due to the presence of high-level radiation sources whose shielding has been compromised.

b. Stop the spill and evaluate for external radiation or contamination levels.

c. Warn everyone in the area of the emergency and evacuate the area immediately.

d. Isolate the area of the spill with cordons or physical barriers.

e. Minimize the spread of contamination and exposure of personnel to radiation and contamination.

f. Notify the fire, police, medical, and emergency personnel, if appropriate, indicate involvement of radioactive material.

g. Shutoff ventilation, heating, and air conditioning equipment if airborne contamination is present to prevent its spreading. For incidents of broken tritium gas sources not involving fire, all personnel will vacate the area (or building, if appropriate) and move upwind for at least 30 minutes. If in a building, open windows and leave doors open, again, except in the case of a fire. The self-contained breathing apparatus (SCBA) worn by firefighters will provide short-term protection against inhalation of airborne radioactive contamination.

h. Notify the IRSO of all radiation emergencies.

3. Emergency Actions

a. The FESD is responsible for responding to radiological emergencies in the local area.

b. To report an emergency incident, dial 911. Notify the dispatcher if radioactive materials are involved.

c. The primary object of emergency actions will be to protect personnel from hazards during a fire or when high-level radiation sources are present. The secondary consideration will be to confine the contamination to the local area of the incident. If there is reason to believe that personnel may have been contaminated or overexposed, such persons will be moved to an area where necessary decontamination and medical assistance can be furnished.

d. Prior plans will be made in anticipation of radiological emergencies to minimize exposure of personnel and spread of contamination. Plans will be written, coordinated, and rehearsed with all support organizations (fire, police, medical, maintenance, repair, damage control, and public personnel, as appropriate) and transport carriers to which the material is being tendered for transport. Applicable written procedures will be to support organizations listed above, supervisors, and foremen.

e. Fire among or near radioactive commodities may produce airborne radioactivity. Personnel should avoid the smoke from such fires, unless they wear the proper PPE.

f. When personnel are seriously injured, all considerations (except fire, explosion, or atmosphere dangerous to life) will become secondary until urgent first aid is given, help for rescue (if necessary) is summoned, and evacuation is completed.

g. When an immediate emergency is under control, a detailed radiological survey will be conducted of the affected area(s). Provided the spread of contamination has been halted, priorities can be assigned to decontamination teams working in contaminated areas. An individual trained in radiological safety will control the areas requiring control of exposure time. The IRSOs or LRSOs assistance will be requested as needed.

Chapter 10

Radiation Health and Dosimetry

1. General. The Radiation Health Program is an essential element to the Marine Corps radiation protection effort and includes the areas of medical examinations radiation protection standards, exposure records, and personal dosimetry. The following information concerning the Program is provided to assist you with establishing your local radiation safety programs:

a. Camp Lejeune's Radiation Health Program is administered by the Naval Hospital at the Radiation Health Office located at building 65.

b. Reference (f) provides the requirements of the Radiation Health Program as directed by the Chief, Bureau of Medicine and Surgery (BUMED).

c. CRSOs and RPAs will become familiar with the location, procedures and services of the Radiation Health Office and address this in local SOPs.

d. It is important that Radiation Safety Officers have access to pertinent information contained in the Radiation Health Program, such as records of exposure to ionizing radiation, results of radiation medical examinations, records of special exams and bioassays, and situational reports on personnel exposure to ionizing radiation.

e. If guidance is required in collecting and assessing bioassay samples, a health physicist is assigned at CMC (SD) and is available for consultation.

2. Radiation Protection Standards. The standards for protection of personnel from ionizing radiation associated with the Radiological Affairs Support Program (RASP) are based on radiation exposure limits and internal deposition limits of reference (f), Chapter 4. The Navy and Marine Corps have also adopted the philosophy of maintaining individual and collective exposures "As Low As Reasonably Achievable" (ALARA). To assist commands in keeping exposures ALARA, the RASP has adopted a maximum administrative control level of **0.5 rem** (500 mrem) per calendar year. This is an administrative control and applies to

radiation workers. The administrative control level will not be exceeded by anyone without prior written approval of that individual's Commanding Officer per the CRSOs recommendations.

3. Medical Examinations. Chapter 2 of reference (f) identifies the requirement that all personnel being considered for routine assignment to duties or occupations requiring exposure to ionizing radiation (for example, workers and supervisors involving X-ray radiography) will be given a medical examination prior to assignment or transfer to those duties. Personnel who are not routinely exposed to ionizing radiation as a result of their normal duties/occupation and who are not likely to exceed 0.5 rem per year are not required to have replacement medical examinations. This is the case for the majority of Base personnel who only handle radioactive commodities. Refer to reference (f) for requirements for pre-placement and subsequent medical examinations. The following individuals require pre-placement and subsequent medical examinations:

a. All X-ray radiographers and radiographer assistants.

b. All personnel whose duties may require entry into a high radiation area (100 mrem or higher in 1 hour).

c. All personnel required by conditions of individual NRMPs.

d. All personnel who routinely work with unsealed radium sources containing greater than 0.1 micro curies of radium or with sealed sources of radioactive material greater than the exempt quantity limits specified in Schedule B of 10 CFR 30.

e. All personnel deemed necessary by the Commanding Officer.

4. Tritium Bioassay Program

a. Users and maintainers of tritium fire control devices will be considered for bioassay if an incident occurs resulting in the release of tritium gas. The IRSO, in conjunction with medical personnel, will determine the need for a special bioassay. Personnel determined to have a high likelihood of receiving an uptake will be directed to local medical facilities for collection of bioassay samples.

b. Bioassay samples will be forwarded to a certified laboratory for analysis.

c. Bioassay results will be retained in the individual's personnel file with a copy forwarded to the IRSO. A copy will also be retained with the applicable incident report.

5. Personnel Dosimetry. Personnel dosimeters provide the means for monitoring and documenting the exposure of radiation workers, evaluating and enhancing ALARA concepts, and ensuring that authorized control levels and limits are not exceeded. It also provides the means for surveillance of individual radiation safety practices and valuable information on exposure trends. For the information received from a personnel dosimeter to be accurate, procedures for handling, storing, and wearing the various devices must be followed. Refer to Chapter 6, of reference (f) for assistance in determining the requirements for dosimetric devices.

6. Exposure Records. When applicable, personnel exposure records will be maintained per Chapter 5 of reference (f).

Chapter 11

Radiation Protection Survey

1. General. A radiation protection survey is an evaluation of the radiation hazards in regards to the procedures and safety standards that are in place to determine if they are sufficient. The purpose of the survey is to ensure a safe working environment and to protect both employees and the general public.

a. A radiation protection survey will be conducted:

(1) Before a new facility is put into routine operation. These records will be maintained indefinitely in the installation or command's RADCON Decommissioning File.

(2) After any significant changes in condition from the initial radiation protection survey which could adversely affect radiation safety (facility modification, increase in operating parameters (energy, workload, occupancy, etc.)). These records will also be maintained indefinitely in the Installation or command's RADCON Decommissioning File.

(3) Every two years, unless otherwise required in a specific NRMP or an NRC license condition.

b. Required radiation protection surveys cited above will be conducted by the RPA, CRSO, AIRSO or IRSO, as applicable and submitted to NAVSEADET RASO via the LRSO for evaluation and approval.

c. Surveys and inspections will be conducted as necessary to comply with specific requirements of the NAVSEA RASP Manual and to evaluate the extent of radiation hazards.

d. Personnel knowledgeable in their design, operation, and maintenance will examine safety devices in permanent facilities (lights, audible signals, warning signs, interlocks, etc.) at least every six months unless otherwise specified in the NAVSEA RASP Manual. Records of the results of semi-annual safety device inspections will be maintained for three years.

e. Provide a copy of all surveys conducted to the IRSO for review and to retain in the Installation's Decommissioning File.

2. Radiation Protection Survey: NRMP Radioactive Commodities

a. Surveys of all areas where NRMP radioactive commodities are used or stored will be performed at least every six months and maintained for three years.

b. Radiation protection surveys will document the following:

(1) Location and extent of any radioactive contamination and radiation levels, appropriateness of boundaries, signs, markings, and protective equipment and procedures.

(2) Corrective action(s) taken to correct observed deficiencies.

(3) Date of survey, model, serial number, and date of calibration of RADIAC or other instrument, name and surveyor's signature.

c. Results of surveys will be reported to operating supervisors with recommendations for corrective actions as necessary.

d. A copy of the survey will be provided to and maintained by the CRSO along with actions taken to correct any deficiencies.

e. Closeout radiation surveys will be conducted and documented for all storage, use, and maintenance locations when operations involving NRMP radioactive commodities have terminated. Contact the LRSO for guidance if residual contamination is found. When requested, surveys will be forwarded to the LRSO and kept on file for three years.

f. Provide a copy of surveys conducted to the IRSO for review and retention in the Installation's Decommissioning File.

3. Radiation Protection Surveys: Licensed Materials

a. Surveys of areas where licensed materials are used or stored will be conducted per the applicable materials license.

b. A copy of the survey will be provided and maintained by the CRSO along with actions taken to correct any deficiencies.

c. Provide a copy of surveys conducted to the IRSO for review and retention in Installation's Decommissioning File.

4. Radiation Protection Survey Records. At a minimum, survey records will contain:

a. Identification of the radiation source(s) and location.

b. Dose levels and contamination levels, as applicable.

c. Airborne radioactivity level, if applicable.

d. Date and time of survey.

e. Instrument(s) used by type and serial number.

f. Calibration date of each instrument used.

g. Surveyor's name.

h. Review date and RSO's name and signature.

Chapter 12

Records and Reports

1. General. It is important that records and reports pertaining to the radiological controls program are maintained as directed to ensure compliance with federal regulations, licenses, permits, Orders and instructions. Proper documentation is required to assist commanders in ensuring the radiation exposure to personnel is maintained as low as reasonably achievable and that contamination levels are within the allowable limits.

a. Radiation protection program records will include the following:

(1) Radiation protection surveys.

(2) Radiation safety audits and inspections.

(3) Radiation medical examinations, if applicable, and as required by reference (f).

(4) All occupational radiation exposure and personnel dosimetry records.

(5) Medical records generated during the period of a radiation worker's employment.

(6) Radiation instrumentation maintenance and calibration records.

(7) Pocket dosimeter logs.

(8) Inspections of safety devices.

(9) Sealed source leak test results.

(10) Records of receipt, transfer, and inventory of radioactive material. Include results of inventory reconciliation efforts.

(11) Utilization logs for radioactive sources.

(12) Utilization logs of X-ray machines.

(13) Training and qualification records of personnel using radiation sources.

(14) Records and reports required by an NRMP and applicable materials licenses.

(15) Reports and records of overexposure, accidents, and significant events. This will include the "User Incident Reporting Worksheet" and "RSO Incident Report Checklist" provided in Chapter 1, figures 1-1 and 1-2.

(16) Records of information important to the decommissioning of a facility, as required by 10 CFR 30.35(g).

b. All medical records and personnel dosimeter records will be maintained per reference (f).

c. Inspections will be documented to record radiological discrepancies and corrective actions taken and to record a final review and statement of adequacy of corrective actions. The RSO and a more senior individual in the chain of command will sign a final review and statement of adequacy of corrective action.

2. Records and Report Retention

a. Records and reports will be retained as follows:

(1) As specified in 10 CFR 20 (subpart L), 30.51, 40.61 and 70.51(b) for receipt, transfer, inventory, and disposal of NRC-licensed material. In general, the retention period for these types of documents is three years. For specific guidelines, refer to the applicable regulation.

(2) Indefinitely for surveys conducted to establish occupational exposure in the absence of personnel dosimeters.

(3) Indefinitely according to 10 CFR 30.35(g) to decommission facilities for unrestricted use.

(4) For a minimum of three years after termination of operations or until the next inspection by NAVSEADET RASO, unless a longer period is specified in the NRMP, applicable section of 10 CFR, or other Marine Corps directives.

(5) For **at least three years** if not otherwise specified in federal regulations, NAVSEA RASP Manual, or other directives.

b. Local command program procedures will address the type of records and reports required by the command and will outline the policy for retention, location and individuals responsible for maintaining records and reports.

c. Maintain radiation program records and reports separately from other records. The standard record retention for other records is one year. Separating the files will be beneficial during audits and inspections and will reduce the chances of inadvertently disposing radiation program records with normal records.

Chapter 13

Training and Training Records

1. Introduction. Commanding officers, department heads, directors, officers in charge and supervisors are responsible to ensure occupationally exposed personnel under their jurisdiction maintain exposure to ionizing radiation As Low As Reasonably Achievable (ALARA). A part of the ALARA philosophy is the assurance that each person has received radiation safety training commensurate with his or her potential for occupational exposure to ionizing radiation.

2. General

a. Training responsibilities and procedures will be addressed in local SOPs and programs.

b. Radiation safety training is a key element in completing the mission safely. Along with meeting the requirements of regulations, it will also assist commands with the following:

(1) Developing worker awareness of radiation safety procedures permits the performance of tasks with greater efficiency and confidence.

(2) When individuals are aware of the risk associated with exposure, they can become active participants in the decision to accept and, where possible, reduce the risk as part of their job.

(3) The number and seriousness of accidents and incidents can be reduced through training.

3. Training Requirements: RSO. IRSOs, AIRSOs, CRSOs will at a minimum attend formal RSO training provided by RASO. ACRSOs and RPAs may attend formal RSO training at the discretion of the command. CRSOs are responsible for ensuring that RPAs receive the proper radiation safety training.

a. Formal RSO Training Courses. NAVSEA RASP Manual (S0420-AA-RAD-010), applicable NRMPs and Materials Licenses list the formal training requirements for RASP RSOs, Assistant Radiation Safety Officers (ARSOs), and X-ray radiographers. The 80-hour

RSO Course (S-4J 0016) offered at NAVSEADET RASO or an approved course of training is required for all RSOs and ARSOs. For information on obtaining a class quota and the course schedule at NAVSEADET RASO, you can access their web page at https://www.raso.navy.mil. Commands conducting X-ray radiography will also provide each X-ray radiographer with at least six hours of annual refresher training and a written examination.

b. Informal RSO Training Courses. Facilities that possess commodities authorized under NRC Materials License 12-00722-06 for tritium containing devices have an additional option of completing a self-paced course using an interactive compact disk titled, "Radioactive Material Handling Safety," provided by TACOM-RI.

4. Training Requirements: Occupationally Exposed Personnel NAVSEA RASP Manual (S0420-AA-RAD-010), applicable NRMPs and Materials Licenses list training requirements for radiation workers, limited radiation workers, occupationally exposed females and their supervisors, emergency personnel, and other organizational personnel. Training requirements for RPAs, handlers and users of radioactive devices are listed in applicable NRMPs. The training will be conducted by an RSO or a designated representative. The designated representative will be assigned in writing by the RSO. The Training requirements include:

a. Radiation Workers. Radiation workers are individuals who receive exposure to ionizing radiation in the course of their employment or duties and are identified by their command as being occupationally exposed. Normally, these individuals routine duties require working directly with sources of ionizing radiation and have a significant potential for exposure. These individuals receive medical examinations. They receive specialized training as part of a specific radiological controls program. Examples include X-ray and gamma industrial radiographers, radiation calibration laboratory technicians, operators of analytical X-ray equipment, and users of nuclear moisture density meters.

(1) Initial Training for Radiation Workers. Each radiation worker will, prior to performing any radiation duties, successfully complete radiation safety training including the following topics as a minimum. Individuals must attain a

minimum score of 70 percent on a written examination. Commands with numerous radioactive devices or radiation producing machines should expand the scope and duration of their initial training accordingly. The RSO or a designated represented will conduct initial training, which will be documented. This initial training includes, at a minimum:

(a) Operating, maintenance, handling, and accountability procedures for devices or radioactive sources in use (including command specific operating procedures).

(b) Radiation exposure limits and control levels.

(c) Specific RADIAC survey instrument requirements and operating procedures.

(d) Facility or site survey requirements and procedures (if applicable to duties).

(e) Specific personnel dosimetry requirements.

(f) Biological effects and risks associated with exposure to ionizing radiation.

(g) Types and sources of ionizing radiation contributing to personnel exposure (alpha, beta, gamma, x-ray, neutron, and internal or external exposure).

(h) Specific procedures for using time, distance, and shielding to maintain individual exposures ALARA.

(i) Emergency procedures.

(j) Responsibility of individuals.

(2) Periodic Training. Each radiation worker will receive annual refresher training covering the following topics, at a minimum:

(a) Command radiation safety operating and emergency procedures.

(b) Use of RADIAC survey instruments.

(c) Personnel dosimetry.

(d) Results of internal audits and inspections.

(e) Command conducted radiation survey results and personnel exposure trends.

b. Limited Radiation Workers and RPAs. Radiation safety training for limited radiation workers and RPAs should be specific to the areas and hazards that the individual could reasonably encounter. Limited radiation workers are not exposed to ionizing radiation on a routine basis; do not require a medical examination, but whose sporadic exposure is monitored. Examples include maintenance personnel, delivery personnel, messengers, inspectors, and emergency response personnel who use equipment containing radioactive materials.

(1) Initial Training. The duration of the initial training for limited workers and RPAs will be locally determined, conducted by the IRSO, CRSO or a designated representative, and documented. Each will receive initial training on the following topics, at a minimum:

(a) Sources of radiation in areas they may frequent.

(b) Potential hazards associated with radiation sources.

(c) Use and meaning of radiation warning signs and barriers.

(d) Procedures to avoid and reduce exposure.

(e) Personnel dosimetry requirements.

(f) Emergency procedures.

(g) Responsibility of individuals.

(h) Storage requirements.

(i) Security and accountability procedures.

(2) Periodic Training. Annually each limited radiation worker will receive documented training covering the scope of the initial training requirement. The IRSO, CRSO, RPA, or a

designated representative will conduct periodic training, which will be documented.

c. Occupationally Exposed Females and Their Supervisors. Exposure of a female worker to ionizing radiation may also involve exposure of an embryo or fetus. IRSOs, CRSOs, or RPAs will provide training to occupationally exposed females and their supervisors regarding the nature of the potential risk to the embryo or fetus from the female's occupational exposure. Instruction concerning prenatal exposure to the unborn child will also be given to personnel who supervise female workers authorized to receive occupational exposure, because such personnel affect the amount of radiation exposure a female worker receives. Instruction concerning prenatal exposure will be given during initial and annual training. The IRSO, CRSO, RPA or a designated representative will conduct the training, which will be documented. A sample format of the training is provided in figure 13-1. The following are the administrative requirements for females occupationally exposed to radiation:

(1) All female personnel receiving radiation safety training will sign a statement stating they understand the requirements of the training. The signed statements will be kept with the individual's training record.

(2) The individual is responsible to inform her supervisor of the pregnancy.

(3) After notification, the individual must then complete a declaration of pregnancy stating the estimated date of pregnancy and maintain a copy in the individual's personnel file. The purpose of the declaration of pregnancy statement is to ensure that pregnant females' occupational exposure to radiation does not exceed 0.5 rem during the entire pregnancy. An example declaration letter is provided in figure 13-2.

d. Emergency Personnel. Firefighting, security, medical, and other personnel who, in response to an emergency situation, may be required to enter areas where they could be exposed to ionizing radiation sources or devices, should receive initial and periodic training on how to protect themselves from the hazards involved. However, emergency personnel should understand the relative priority of radiological controls versus other safety considerations. Firefighters, for example, should be trained that when a fire involves radioactivity, the fire is,

in most cases, more of a threat to life and property than radiation exposure, and radiological controls will not be instituted that significantly impair the firefighting effectiveness.

(1) Initial Training. The IRSO, CRSO, RPA, or a designated representative will conduct initial training for emergency personnel, which will be documented. All emergency personnel who could be exposed to ionizing radiation during the performance of their duties will receive training on the following topics, at a minimum:

(a) Sources of radiation in areas where they may be required to respond.

(b) Potential hazards associated with radiation sources in areas where they may be required to respond.

(c) Relative priority of RADCON versus other safety considerations during an emergency.

(d) Procedures to avoid or reduce exposures in emergency response actions.

(e) Procedures to avoid or reduce potential radioactive contamination in emergency response situations.

(f) Personnel radiation safety requirements, i.e., protective clothing, stay times, dosimetry, etc., for personnel entering radiation areas under emergency conditions.

(g) Familiarization with the physical layout of facilities.

(h) Persons to contact to provide RADCON support during or after an emergency.

(i) Storage requirements of radioactive devices on emergency vehicles.

(j) Security and accountability procedures of radioactive devices during emergencies.

(2) Periodic Training. Persons classified as "emergency personnel" will receive annual training covering the scope of

the initial training requirements. Additional training will be provided whenever there is a significant increase in the radiation exposure potential due to additional or different sources of ionizing radiation. The RSO or a designated representative will conduct periodic training, which will be documented.

e. Other Organizational Personnel and Visitors. Personnel, who work in or frequent areas adjacent to radiation areas or radioactive materials storage areas, while not actually being involved in the RADCON Program, may develop concerns about radiation because they often see radiation warning signs. To alleviate concerns and enhance awareness, it is incumbent upon the command to provide these personnel with a briefing.

(1) Initial Training. Personnel who routinely work in or frequent areas adjacent to radiation areas and radioactive material storage areas will receive an initial briefing on the need to take note of radiation warning signs and boundary markers. These personnel will be informed of the nature of potential radiation exposures and that the majority of their exposures come from natural background, man-made enhancements to background, and medical exposures (with the latter comprising the most significant portion). The briefing should include an explanation of what is done to protect them from radiation exposure. All personnel should be encouraged to contact the IRSO, CRSO or RPA if they have additional questions regarding radiation exposure in their work areas.

(2) Periodic Training. Because of the sensitive nature of the subject of potential radiation exposures, the RSO will repeat the initial briefing as frequently as necessary to alleviate concerns.

f. Personnel Responsible for Shipping Radioactive Materials. The following training is required for personnel involved with certifying shipments, preparation, packaging or handling radioactive materials for transportation.

(1) Initial Training. Personnel responsible for shipping radioactive materials must receive specific training as directed in Part II, Chapter 204, paragraph (D) of reference (j). Successfully completing one of the following courses will qualify you to perform these duties.

(a) Radiation Safety Officers Course (S-4J-0016), offered by NAVSEADET RASO.

(b) Radioactive Materials Transportation Course (S-553-1111), offered by NAVSEADET RASO.

(c) U.S. Army Communication-Electronics Command Radioactive Commodity Identification and Transportation Course, offered by U.S. Army Communications-Electronics Command, Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-3112, DSN 987-31123, Commercial 732-427-3112.

(2) Periodic Training. Personnel must receive refresher training at 24-month intervals. The refresher training will address SOPs and include updates to reference (j).

g. Personnel Responsible for Transporting Radioactive Materials. The following training is required for personnel responsible for transporting radioactive materials in government vehicles to include Material Handling Equipment such as forklifts or pallet jacks.

(1) Initial Training. Personnel must receive specific training prior to transporting radioactive materials, as directed in reference (d) part 172.704 which will include:

(a) General awareness training that will enable personnel to easily identify radioactive materials prior to transporting them.

(b) Familiarization of the requirements of reference (d) parts 171-180.

(c) The hazards associated with the radioactive materials being transported.

(d) Emergency actions and procedures for radiological incidents/accidents involving the radioactive materials being transported.

(e) Protective measures to protect personnel and prevent exposure from the radioactive materials during transport.

(f) Methods and procedures to avoid accidents such as the proper handling of packages containing radioactive materials.

(g) Security and storage procedures to ensure that accountability of the radioactive materials is maintained at all times.

(2) Periodic Training. Annually, personnel responsible for transporting radioactive materials will receive documented training covering the scope of the initial training requirement. The refresher training will include any new radioactive materials that will be transported. The IRSO/CRSO or RPA will conduct the periodic training, which will be documented.

5. Training Records. Failure to document required training is considered evidence of failure to conduct required training and will be so noted in internal audits and compliance inspections.

a. Initial Radiation Safety Training

(1) Records of initial radiation safety training for radiation workers are a permanent record and will normally be maintained in the individual's service record for military and the official personnel folder for civilian employees.

(2) For other categories of personnel, records of initial training will be maintained in organizational training records for as long as the individual is assigned to the organization.

(3) Records of initial training will be course completion certificates or signed memoranda stating successful completion of specified initial training and copies of tests and test scores of personnel. The RSO or individual conducting the training will sign memoranda of completion.

b. Periodic Radiation Safety Training

(1) The RSO or activity training office will maintain records of periodic radiation safety training for all categories of personnel for a period of three years.

(2) The format for maintaining records of periodic training is at the discretion of the RSO or training office. At

a minimum, the record will identify the date of training, subject matter covered, length of training, person(s) conducting the training, and attendees.

RADIATION SAFETY TRAINING

Subject: RADIATION EXPOSURE CONTROL FOR THE UNBORN CHILD

Purpose: The purpose of the subject training is to ensure that female employees subject to radiation hazards are aware of the policy concerning the radiation hazards to an unborn child.

References: (a) MCI 5104.3A
(b) NAVSEA S0420-AA-RAD-010 (RAD-010)
(c) U.S. NRC Regulatory Guide 8.13

1. The National Council on Radiation Protection and Measurement (NCRP) concerning limits for exposure to ionizing radiation recommends a total dose equivalent limit, excluding medical exposure, of 0.5 rem(roentgen equivalent man, a unit for measuring absorbed doses of radiation) for the embryo-fetus. Once a pregnancy becomes known, exposure of the embryo-fetus will be no greater than 0.05 rem's in any month.

2. The radiation exposure control level for personnel physically capable of bearing children shall not exceed 0.5 rem per year.

3. All reasonable efforts will be made to keep ionizing radiation exposure to the unborn child to the very lowest practical level.

4. Per reference (a) through (c), female employees subject to radiation hazards are to be informed of such hazards by reviewing reference (c) and acknowledging the following statement:

> "The recommendations of the National Council on Radiation Protection and Measurements to limit radiation exposure to the unborn child to the very lowest practical level, not to exceed 0.5 rem's during the entire time of pregnancy, have been understood by me. I recognize that protection of the unborn child is a joint responsibility of the employer and the employee. I agree that it is my responsibility to promptly notify the Radiation Safety Officer/Assistant should I become pregnant."

Signature: _____ Date of Training: _____

Printed Name: _____ Training Conducted By: _____

5. A copy of this acknowledgment will be filed in the individual's training jacket.

MCBCL/SAFETY/5104.1/11 (3/10) PREVIOUS EDITIONS ARE OBSOLETE ADOBE 8.0

Figure 13-1.--Radiation Safety Training Record for Females

DECLARATION OF PREGNANCY

To: _____

In accordance with the Nuclear Regulatory Commission's (NRC) regulation at 10 CFR 20.1208, "Dose to an Embryo/Fetus," I am declaring that I am pregnant.
I believe I became pregnant _____(dd/mm/yy)

I understand the radiation dose to my embryo/fetus during my entire pregnancy will not be allowed to exceed 0.5 rem (5 millisievert) (unless that dose has already been exceeded between the time of conception and submitting this letter). I have been provided a copy of or access to the NRC Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure." I understand to meet the lower dose limit may require a change in job or job responsibilities during my pregnancy.

_____
Signature

_____
Printed Name

_____
Date

Figure 13-2.--Sample Letter Declaring Pregnancy

Chapter 14

Transportation of Radioactive Materials

1. General. Regulations governing the transportation of hazardous material are designed to prevent undue exposures and injury to the general public during transport. For this reason, most regulations govern the design and construction of the transportation package or container. The proper packaging, labeling, and other tasks associated with the transportation of radioactive materials are complex and dependent on form, quantity, and isotope of the radioactive materials to be transported. Shipment regulations of radioactive materials are provided in 49 CFR Parts 170-199, 10 CFR Part 71 and reference (j). General guidelines are as follows:

a. Prior to transporting radioactive materials, each activity will consult with the applicable references.

b. Each command is responsible to ensure personnel performing transportation requirements receive instructions regarding the applicable sections of 49 CFR 172 subpart H and 173.1(b).

c. Personnel involved with the preparation, certification and shipment of radioactive material must be trained per reference (j).

d. Department of Transportation (DOT) regulations will apply to the movement of radioactive material outside the boundaries of an activity.

e. Transportation on military aircraft must comply with requirements of the International Civil Aviation Organization (ICAO).

f. The RSO is responsible for ensuring that all packages offered for transportation or transported by the activity, conform to all applicable requirements of the NRMP, NRC license, NAVSEA RASP Manual, 10 CFR, and 49 CFR.

g. The supply officer and responsible officer for each activity will ensure all radioactive material has been properly packaged, certified and is expeditiously transported to the receiving organization.

h. A record of transfer of radioactive material will be maintained for at least three years from the date the material is accepted by the carrier. At a minimum, the record will contain the following:

(1) Verification the receiving activity is licensed or authorized by an NRMP or an NRC license to receive the material.

(2) A copy of documentation identifying the radioactive material.

(3) For sealed sources, a copy of the current leak test certificate and a list of serial numbers for sources being transferred.

(4) A copy of the bill of lading or manifest for the shipment.

(5) A copy of the acknowledgement of receipt of the material.

2. Transportation of Radioactive Materials Aboard the Installation

a. Transportation of radioactive materials will be conducted per references (a) and (d) and the applicable Materials License or NRMP.

b. Transportation of radioactive materials will be conducted using government vehicles or designated commercial vehicles. Transportation of radioactive materials in privately owned vehicles is not authorized.

c. Items will be properly secured within the vehicle to prevent damage during movement.

d. Control and accountability of the radioactive materials will be maintained at all times to prevent unauthorized removal or access. When not stored within a secured or controlled area, the radioactive materials will be under constant surveillance by authorized personnel.

e. Radioactive materials being transported will be accompanied by a Radioactive Material Movement Form or

equivalent document that provides specific identifying information for the radioactive material and emergency contact information in the event of an accident involving the equipment items being transported. An example Radioactive Materials Movement form is provided in Chapter 8, figure 8-1.

f. Personnel tasked with transporting radioactive materials, will be trained in handling hazardous materials. The required training is outlined in 49 CFR 172.704. It is the responsibility of the unit RPA transporting the radioactive material to ensure the proper training has been conducted. Documentation of personnel receiving this training will be maintained by the RPA and in the individual's personal training record.

3. Transportation of Radioactive Materials on North Carolina State Roads by MCB Personnel. Transporting radioactive materials on North Carolina state roads includes travel to and from training areas accessed by state roads.

a. Transporting radioactive materials on state roads is regulated by 49 CFR Parts 170-189.

b. Paragraph 2, of this Order applies.

c. Radiological incidents or accidents that occur on state roads will be reported as outlined in this Order. The Radiation Protection Section of the North Carolina Department of the Environmental and Natural Resources (NCDENR) must also be notified.

Chapter 15

Program Audits and Inspections

1. Internal Audits and Inspections. Internal audits and inspections are key components to a successful radiation program. The results of the internal inspections and audits will be reviewed and endorsed by the responsible Commanding Officer. The requirements for audits and inspections are specified in applicable NRMP's and Licenses. General requirements are provided in reference (a) and are as follows:

a. CRSOs will include in local Orders and procedures a formal internal audit and inspection plan that evaluates compliance with federal and Navy regulations, NRMP conditions, and the provisions of NAVSEA RASP Manual.

b. Internal audits and inspections will be conducted by all echelons of commands or departments where radioactive materials are stored, maintained, handled or used.

c. Internal audits will be conducted and documented by the CRSO, ACRSO or RPA at least every six months **unless otherwise specified** in NAVSEA RASP Manual, an NRMP, or federal regulations.

d. The internal audit and inspection plan will include, at a minimum, evaluation of the following applicable subject areas for operations involving radioactive devices or sources at the interval listed:

(1) Annually

(a) RADCON Program related training.

(2) Semi-Annually

(a) Radiation medical examinations (replacements, re-examination, and termination, as required by NAVMED P-5055).

(b) Occupational radiation exposure and personnel dosimeter records and logs; e.g., TLD (thermoluminescent dosimeter), and pocket dosimeter.

(c) Receipt, transfer, and disposal of radioactive material.

(d) Required records and reports.

(e) Corrective actions for discrepancies identified during previous audits or inspections.

(3) Quarterly

(a) Radiological control procedures and practices.

(b) NRMP compliance.

(c) Transportation.

e. Records of internal audits and inspections will be retained for a minimum of three years and be provided to inspectors during external inspections.

f. The RADCON Program Review Checklist, figure 15-1, is a good tool to use during internal inspections. Locally generated inspection checklists are authorized and should be incorporated into local Orders and SOPs.

g. Corrective actions and milestones will be provided for all discrepancies identified during internal audits and inspections and attached to the applicable inspection checklist.

2. External Audits and Inspections

a. As required by OPNAV Instructions 6470.3 and NAVSEA 5100.18A, NAVSEADET RASO audits and inspects all RASP radiation safety programs to determine compliance with federal and Navy regulations, NAVSEA RASP Manual and applicable NRMPs.

b. Per reference (a) and applicable NRMPs, the RADCON Office will audit and inspect RADCON programs to ensure compliance with NRMP and regulatory requirements.

c. Per the NRC Master Materials License issued to the Navy, the NRC has reserved the right to conduct inspections of the Navy program, including Marine Corps commands with an NRMP and/or radioactive commodities, at times and places the NRC considers appropriate.

d. An inspection may be announced or unannounced. Commands will normally be notified prior to an inspection.

e. Notify the IRSO of all external audits or inspections.

f. Refer to reference (a) for command responsibilities, conditions, inspection protocols and reporting procedures during external audits and inspections.

g. Official responses for external inspections and audits will be routed via the responsible Commanding Officer for endorsement.

h. Retain audit and inspection reports for a minimum of three years.

USMC
Radiological Controls Office

TYPE TITLE HERE

Program Review Checklist

Figure 15-1. -- Radiological Controls Program Checklist

SUMMARY SHEET

Date of Audit: _____

Name of person(s) who conducted the audit:

Areas Audited:

Personnel Interviewed:

Radiological Control Program Elements Reviewed:

A. Management ☐

B. Storage & Uses Areas ☐

C. Transportation ☐

D. Corrective Action Required ☐

E. Follow-up ☐

_____ _____

Signature of Lead Auditor Date

Figure 15-1. -- Radiological Controls Program Checklist

A. Management

		Y	N	N/O	N/A
1.	Has the Commander implemented a formal Radiological Control Program (RCP)?				
	References: 10 CFR 20.1101 (a); NAVSEA S0420-AA-RAD-10, sec 1.3.8.5; MCO 5104.3, para 7.f.2				
	Title and Date:				
	If not, stop audit, unit has failed this audit and is required to receive and "unsatisfactory rating." Schedule out-brief of command element.				
		Y	N	N/O	N/A
2.	Has the Commander designated a qualified Command Radiation Safety Officer (CRSO) and Alternate (ARSO) in writing?				
	References: NAVSEA S0420-AA-RAD-10, sec 1.3.8.4; MCO 5104.3, para 7.f.1				
	If not, unit has failed this audit and is required to receive an "unsatisfactory rating." Complete the audit.				
		Y	N	N/O	N/A
3.	Has the CRSO & ARSO completed the RSO Course (S-4J-0016) at NAVSEADET RASO?				
	References: NAVSEA S0420-AA-RAD-10, sec 2.2.1.1; MCO 5104.3, para 7.f.2				
	If not, when are they scheduled to attend training?				
		Y	N	N/O	N/A
4.	Are Radiation Protection Assistants (RPA) assigned in all appropriate areas?				
	References: MCO 5104.3				
		Y	N	N/O	N/A
5.	Have RPAs been trained IAW NRMP and MCO 5104.3?				
	If not, when are they scheduled to attend training?				
		Y	N	N/O	N/A
6.	Have all users been trained IAW NRMP and MCO 5104.3?				
	References: 10 CFR 19; NAVSEA S0420-AA-RAD-10, sec 2.2.5.1; NRMP 10-67004-T1NP, T2NP, T2NP				
	If not, when are they scheduled to attend training?				
		Y	N	N/O	N/A
7.	Have emergency response personnel been trained on radiation hazards?				
	References: NAVSEA S0420-AA-RAD-10, sec 2.8.2.4; MCO 5104.3, para 7.f.3				
	If not, when are they scheduled to attend training?				
		Y	N	N/O	N/A
8.	Were physical inventories of permitted radioactive materials conducted and reconciled every six months, and maintained for one year to show gains and losses?				
	References: 10 CFR 20.2103; NAVSEA S0420-AA-RAD-10, sec 2.6.2.2 &2.6.2.3; NRMPs 10-67004-T1NP, 10-67004-T2NP, 10-67004-T3NP				
	If not, unit has failed this audit and is required to receive an "unsatisfactory rating." Complete the audit.				
	Note: An inventory of all radioactive devices is required to be conducted and copies submitted to the IRSO on a semi-annual basis no later than 15 March and 15 September per BO 5104.1. Maintain copies of the inventories for a minimum of 3 years.				
		Y	N	N/O	N/A
a.	Does the command inventory match the Albany inventory?				
	If not, transfer the documents available (MRO, WIR, DD1348)				
		Y	N	N/O	N/A
b.	Were corrective actions established and implemented for discrepancies?				
	If not, explain why and provide the action to be taken to correct the discrepancies.				

Figure 15-1. -- Radiological Controls Program Checklist

		Y	N	N/O	N/A
c.	Are radioactive material inventories maintained pending disposal?				
	References: 10 CFR 2103; NAVSEA S0420-AA-RAD-10, sec 2.6.2.2 &2.6.2.3; MCO 5104.3, para 6.1				
d.	Does each inventory include:				
	(1) Serial number of drift tube module?				
	References: NRMP 10-67004-T1NP, T2NP Answer:				
	(2) Serial number of device?				
	References: NRMP 10-67004-T1NP, T2NP Answer:				
	(3) Unit RUC/AAC and Mailing Address				
	References: NRMP 10-67004-T1NP, T2NP				
	Answer:				
	(4) Radioisotope, Chemical and Physical Form, Activity, Date of Activity determination, location and custodian?				
	References: NAVSEA S0420-AA-RAD-10, sec 2.6.2.2.a				
	Answer:				
		Y	N	N/O	N/A
9.	Were all permitted devices leak tested IAW NRMP requirements?				
	If not, unit has failed this audit and is required to receive and "unsatisfactory rating." Complete the audit.				
	References: 10 CFR 2103; NAVSEA S0420-AA-RAD-10, sec 2.6.2.2 &2.6.2.3; MCO 5104.3, para 6.1				
a.	Were all permitted devices leak tested IAW NRMP requirements?				
	(1) Were messages sent to deficient units from their higher headquarters?				
	(2) Did the units reply within two weeks of receipt of the message?				
	(3) If not, list the units and explain why?				
	Enter #3 response here				
		Y	N	N/O	N/A
b.	Were corrective actions established and implemented to correct future deficiencies?				
	If not, when will they be established?				
c.	Are annual leak tests records updated with the current results? References: NRMP 10-67004-T1NP, T2NP				
	If not, when will they be updated?				
d.	Are the leak test wipes forwarded to MCLB Albany for analysis? References: NRMP 10-67004-T1NP, T2NP				
e.	**If not, where were they analyzed? Provide address and POC.**				
10.	Are personnel assigned to duties in which they receive occupational exposure given a radiation medical exam IAW NAVMED P-5055? References: 10 CFR 20.1502; NAVSEA S0420	Y	N	N/O	N/A
	Note: No personnel receive an occupational exposure.				
11.	Has an annual review of the RDCP content and implementation been performed and reported to the Commander for approval? References: 10 CFR 20.1101c	Y	N	N/O	N/A
	Note: If not, when will program status be reported?				

Figure 15-1. -- Radiological Controls Program Checklist

12.	Has the RSO established internal audit and inspection procedures?	Y	N	N/O	N/A
	References: NAVSEA S0420-AA-RAD-010, sec 2.6.12.1 & 2.6.12.4				
	If not, when will they be established?				
13.	Are internal audits and inspections conducted?	Y	N	N/O	N/A
	References: NAVSEA S0420-AA-RAD-010, sec 2.6.12.1 & 2.6.12.4				
a.	Are manuals and local instructions evaluated for accuracy with current requirements?				
	References: NRMP 10-67004-T1NP				
b.	Every six months for RAM receipts and transfer records, and corrective actions?				
	References: NAVSEA S0420-AA-RAD-010, sec 2.6.12.3				
c.	Quarterly for NRMP compliance and transportation?				
	References: NAVSEA S0420-AA-RAD-010, sec 2.6.12.3				
d.	Were corrective actions and milestones established for each finding?				
	If not, when will they be established?				
e.	Were corrective actions completed?				
	If not, when will they be completed?				
f.	Are audits reported to the Commander and corrective actions tracked as appropriate?				
	If not, when will they be completed?				
14.	Are records showing results of audits and surveys maintained and retained on file for a minimum period or 3 years?	Y	N	N/O	N/A
	References: 10 CFR 20.2103 (a)				
15.	Are surveys accurately documented?	Y	N	N/O	N/A
	References: 10 CFR 20.2103, NAVSEA S0420-AA-RAD-010, sec 7.2.2				
16.	Are surveys sufficiently comprehensive?	Y	N	N/O	N/A
	References: 10 CFR 20.1302; 10CFR 20.1501				

B. Storage & Use Areas

1.	Are personnel aware of the requirement to prevent radioactive materials from entering the Defense Reutilization and Marketing Office (DRMO)?	Y	N	N/O	N/A
	References: MCO 5104.3, encl (1), para 6.a; MCO P4400.105C				
2.	Are local SOPs or equivalent established for ongoing operations involving radioactive material, including management and handling of LLRW?	Y	N	N/O	N/A
	References: 10 CFR 19.11				
	If not, when will they be established?				
3.	Do local controls include requirements for:				
a.	Demilitarization?	Y	N	N/O	N/A
	References: NRMP 10-67004-T1NP				
b.	Identification as containing radioactive material?				
	References: NRMP 10-67004-T1NP				
c.	Issue and/or transfer control?				
	References: NRMP 10-67004-T1NP				
4.	Is all RAM, including LLRW, stored in separate warehouse sections away from flammable materials, explosives, food products or other incompatible commodities?	Y	N	N/O	N/A
	References: NAVSEA S0420-AA-RAD-010, sec 7.52				

Figure 15-1. -- Radiological Controls Program Checklist

		Y	N	N/O	N/A
5.	Is RAM secured against unauthorized use? References: NRP 10-67004-T1NP				
	If not, unit has failed this audit and is required to receive an "unsatisfactory rating." Complete the audit.				
6.	Are containers or RAM properly labeled? References: 10 CFR 20.1904	Y	N	N/O	N/A
7.	Are RAM storage areas posted with "CAUTION- RADIOACTIVE MATERIAL" signs? If applicable, are maintenance areas posted? References: 10 CFR 20.1902; NAVSEA S-0420-AA-RAD-010, sec 7.5.2	Y	N	N/O	N/A
8.	Are signs prohibiting smoking, eating and drinking posted in the RAM storage and use areas? References: NAVSEA S-0420-AA-RAD-010, sec 2.6.6.1	Y	N	N/O	N/A
9.	Are the following documents posted near the RAM storage and use areas? References: 10 CFR 19.11	Y	N	N/O	N/A
a.	Form NRC 3, Notice to Employees? References: 10 CFR 19.11 (b), (c), (d)				
b.	Section 206 of the Energy Reorganization Act of 1974? References: 10 CFR 21.6; NAVSEA S0420-AA-RAD-010, sec 2.4.3.a				
10.	Are copies of the following posted near the radioactive material storage area at a location frequented by all employees, or is a notice posted to describe the location of these documents and a POC:	Y	N	N/O	N/A
a.	10 CFR parts 19, 20, 21, 30 and 71? Reference: 10 CFR 19.1 (b)				
b.	NRMPS? Reference: 10 CFR 19.11				
c.	Local SOP? Reference: 10 CFR 19.11				
d.	OPNAVINST 6470.3 - Naval Radiation Safety Committee? Reference: NRMP 10-67004-T1NP				
e.	NAVMED P-5055, Radiation Health Protection Manual? Reference: NRMP 10-67004-T1NP				
f.	OPNAVINST 3100.6 Special Incident Reporting Procedures? Reference: NRMP 10-67004-T1NP				
g.	NAVSEA S0420-AA-RAD-010, Radiological Affairs Support Program Manual? Reference: NRMP 10-67004-T1NP				
h.	Title 49, Code of Federal Regulations, Part 171-180, "Hazardous Materials Regulations"? Reference: NRMP 10-67004-T1NP				
11.	Are RAM users familiar with applicable technical manuals? Reference: NRMP 10-67004-T1NP	Y	N	N/O	N/A
12.	Are disposable gloves and other PPE worn as required? Reference: NRMP 10-67004-T1NP	Y	N	N/O	N/A
13.	Are maintenance personnel trained in accordance with the requirements of applicable NRMPs? Reference: NRMP 10-67004-T1NP	Y	N	N/O	N/A

Figure 15-1. -- Radiological Controls Program Checklist

C. Transportation

		Y	N	N/O	N/A
1.	Are HAZMAT Employees as defined in 49 CFR, part 171.8, trained per 49 CFR, Subpart H- Training; including refresher training, testing, and documentation? Reference: NRMP 10-67004-T1NP				
	If not, when will they be trained?				
2.	Have procedures been implemented to properly receive/open and to ship packages containing RAM? Reference: 10 CFR 20.1906				
	If not, when will they be implemented?				
3.	Are surveys of outgoing and incoming shipment packages performed when necessary and the results documented? Reference: 10 CFR 20.1906				
4.	Are shipping files/records maintained for 3 years? Reference: 10 CFR 20. subpart L				
5.	Have radiation safety procedures been implemented for transporting licensed material within their own facility, unrelated to the use of public highways? Reference: 10 CFR 71.5; 10 CFR 20.1101				
	If not, when will they be implemented?				
6.	Have all shipping, receipt, and transfer transaction reports been submitted to COMMARCORLOGBASES? Reference: NRMP 10-67004-T1NP				
	If not, when will they be submitted?				
7.	Are transportation records, including training records w/test scores, maintained on file for the appropriate minimum time periods?				
a.	Hazmat Training - 3 years				
b.	Shipping Records - 3 years				
c.	Receipt Records - As long as the RAM is possessed and for 3 years after transfer or disposal.				
d.	Surveys - Indefinitely				

D. Corrective Action Required (Space will expand as required)

E. Follow-Up (Space will expand as required)

Figure 15-1. -- Radiological Controls Program Checklist

Chapter 16

Contract and Contractor Requirements

1. General. When working with contracts or contractors not managed by the ROICC Office, the hiring organization is responsible to ensure all contracts or contractors requiring the use of radioactive devices follow specific guidelines when working aboard the installation. At a minimum the follow applies.

a. Marine Corps commands engaged in negotiating contracts will include in the contract terms a clause requiring compliance with requirements of NRMPs, NRC Materials Licenses, references (a) and (e), 29 CFR 1910.1096, 10 CFR 20 and this Order.

b. When applicable, contractors will be required to provide a copy of a NRC or agreement state license or certificate of registration to the IRSO. For agreement state licenses, the contractor will be required to provide written notification to the NC Department of Environmental and Natural Resources, NC Radiation Protection Section required by 10 CFR 150.20.

c. Marine Corps personnel will not be used as operators under an NRC or agreement state license issued to a contractor.

d. Request authorization from the IRSO, prior to transporting radioactive devices aboard the Installation.

e. Establish and maintain at the work site safety procedures pertaining to handling and using radioactive devices specific to the job being done.

f. Establish written procedures for emergencies involving radioactive materials, which will include coordination with civilian and/or military emergency response organizations as necessary. Provide a copy of these procedures to the IRSO and emergency response organizations.

g. Ensure operations involving radiation hazards or radiation generating devices are performed under the direct supervision of a designated Radiation Safety Officer.

h. Maintain control and accountability of radioactive devices at all times. Devices while in storage will be properly

secured to prevent unauthorized access. Devices not in storage will be maintained under constant surveillance.

i. Notify the IRSO of all radiological incidents and emergencies to include loss or theft of radioactive devices.

j. Transportation of radioactive devices aboard the installation will be conducted per reference (d) and will be accompanied by a Radioactive Material Movement Form or similar document containing pertinent information required in case of an emergency. An example Radioactive Materials Movement form is provided in Chapter 8, figure 8-1.

APPENDIX A

RADIOLOGICAL CONTROLS PROGRAM POINT OF CONTACTS

1. CONTACT INFORMATION

a. CNO

Deputy Chief of Naval Operations for Fleet Readiness
Division (N45)
Attn: Executive Secretary (N455),
Naval Radiation Safety Committee
2000 Navy Pentagon (NC1 Suite #2000)
Washington, DC 20350-2000
Telephone Number: DSN 332-5365/2582
Commercial Number: (703) 602-5365/2582
Message Address: CNO WASHINGTON DC//N455//

b. COMNAVSEASYSCOM

Commander, Naval Sea Systems Command (SEA O4N)
1333 Isaac Hull Avenue SE
Washington Navy Yard, DC 20376-0001
Telephone Number: DSN 326-2414
Commercial Number: (202) 781-2414
Message Address: COMNAVSEASYSCOM WASHINGTON DC//04N//

c. NAVSEADET RASO

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 Number: (757) 887-4692
Message Address: NAVSEADET RASO YORKTOWN VA//001//
Website: https://www.raso.navy.mil/

d. CMC (SD)

Commandant of the Marine Corps (SD)
2 Navy Annex
Washington, DC 20380-1775
Telephone Number: DSN 224-1202/3164/1077
Commercial Number: (703) 614-1202/3164/1077

Message Address: CMC WASHINGTON DC//SD//
Website: http://hqinet001.hqmc.usmc.mil/sd/index.htm

e. LRSO and USMC RADCON OFFICE

Commander
Marine Corps Logistics Bases
Logistics Operations Suite 20330
Attn: Radiological Controls Office
814 Radford Boulevard
Albany, GA 31704-0330
Telephone Number: DSN 567-5511/5513
Commercial Number: (229) 639-5511/5513
Message Address: COMMARCORLOGBASES ALBANY GA//L10//
Website: http://www.logcom.usmc.mil/radcon/default.asp

f. AMC

Headquarters, U.S. Army Materiel Command (AMC)
5001 Eisenhower Avenue
Alexandria, VA 22333-0001
Telephone Number: DSN 767-9340
Commercial Number: (703) 617-9340
Facsimile: DSN 767-9469

g. TACOM

U.S. Army Tank-Automotive and Armaments Command
Attn: Mr. Vernon E. Vondera, Safety Director
Rock Island, IL 61299-7630
Telephone Number: DSN 793-6499
Commercial Number: (309) 782-6499
Facsimile: DSN 793-6758

h. U.S. MARINE CORPS FORCES COMMAND

Radiation Program Manager
Department of Safety and Standardization
U.S. Marine Corps Forces Command
1775 Forrestal Drive
Building CA-486
Norfolk, VA 23551
Comm (757)445-4275
DSN 565-4275

i. IRSO/AIRSO

Commanding Officer
Attn: Dir ISS (Safety Division)
Marine Corps Base
PSC Box 20004
Camp Lejeune NC 28542-0004
Telephone Number: DSN 751-7449/5932
Commercial Number: (910) 451-7449/5932
Facsimile: DSN 751-2798

j. II MEF CRSO

Commanding General
II MEF Safety (CRSO)
PSC Box 20080
Camp Lejeune, NC 28542-0080
Telephone Number: DSN 751-4288
Commercial Number: (910) 451-4288

k. 2d Marine Division CRSO

Commanding General
AC/S G-7 Safety (CRSO)
2d Marine Division
Camp Lejeune, NC 28542
Telephone Number: DSN 751-8040
Commercial Number: (910) 451-8040

l. 2d Marine Logistics Group CRSO

Commanding General
AC/S G-4/Safety (CRSO)
2d Marine Logistics Group
PSC Box 20002
Camp Lejeune, NC 28542-0002
Telephone Number: DSN 751-0519
Commercial Number: (910) 451-0519
Facsimile: (910) 451-0517

m. Marine Corps Air Station New River CRSO

Commanding Officer
Attn: Safety & Environmental Health
MCAS New River
PSC Box 21001
Jacksonville NC 28545-1001
Telephone Number: DSN 752-5540/6143
Commercial Number: (910) 452-5540/6143
Facsimile: DSN 752-6488

n. Radiation Health Office

Radiation Health Office
Naval Hospital, Bldg 65
Camp Lejeune, NC 28542
Telephone Number: DSN 751-2707 ext. 290
Commercial Number: (910) 451-2707 ext. 290

o. NC Radiation Protection Section

NC Department of Environmental and Natural Resources
NC Radiation Protection Section
3825 Barrett Drive
Raleigh, NC 27609
Telephone Number: (919) 571-4141
Facsimile: (919) 571-4148
After Normal Work Hours: (919) 733-3943

APPENDIX B

RADIOLOGICAL ACCIDENT/INCIDENT REPORTING CHAIN

1. Notification Information

a. Users/RPAs will notify:

(1) Command RSO (CRSO)/Installation RSO (IRSO) as applicable.

(2) Unit Commanding Officer.

b. CRSO will notify:

(1) Logistics RSO (LRSO).

(2) Commanding General/Commanding Officer.

(3) IRSO as applicable.

c. IRSO will notify:

(1) LRSO.

(2) Commanding General/Commanding Officer.

d. LRSO will notify:

(1) NAVSEADET RASO.

(2) COMMARCORLOGBASES.

(3) CMC (SD).

e. NAVSEADET RASO will notify:

(1) CNO (N455).

(2) NRC.

APPENDIX C

GLOSSARY OF TERMS

Absorbed Dose. The energy imparted to matter by ionizing radiation per unit mass of irradiated materials at the place of interest. The unit of absorbed dose is the rad. One rad equals 100 ergs per gram. The equivalent SI unit of dose is the Gray (Gy). One Gy equals 100 rads.

ALARA. Concept of controlling the possession, use, and transfer of radioactive material, or a radiation producing machine, in such a way that the total dose to the individual worker is kept "as low as reasonably achievable" (ALARA)...considering the state of technology and the economics of improvement versus the benefits to public health and safety, and consistent with the purpose for which the activity is undertaken.

Authorized User. An individual who uses or operates a radiation source item, who has had the appropriate training, and who is determined by the Radiation Safety Officer (RSO) to be qualified to work with radioactive material.

Calibration. The act of standardizing measurement by determining the variation or deviation from a standard to ascertain the proper correction factors.

Centi. Numerical (metric) prefix meaning hundredth part of (1/100, 0.01, or 1 x 10^{-2}). Abbreviated as "c."

Command. Includes any Navy or Marine Corps facility or activity.

Command Radiation Safety Officer (CRSO). The individual appointed in writing at the Marine Expeditionary Force (MEF) or major subordinate command (MSC) level tasked with direct oversight of radiation safety practices and procedures.

Contaminated Area. An area where radioactive contamination exists.

Contamination. The presence of radioactive material where it is unwanted.

Controlled Area. Any area where radioactive materials or radiation producing devices are used or stored, and access is controlled to protect individuals from exposure to radiation.
Curie (Ci). A unit of radioactivity. One curie equals 3.7 x 10_{10} nuclear disintegrations per second (dps). The equivalent SI unit of radioactivity is the Becquerel (Bq). A Bq is equal to 1 dps. Therefore 1 Ci = 3.7 x 10_{10} Bq.

Dose. The total quantity of radiation absorbed per unit mass during a specific time period. For special purposes, it must be appropriately qualified. If not qualified, it refers to absorbed dose.

Dose Equivalent. A quantity used in radiation protection to express all radiations on a common scale for calculating the effective absorbed dose. It is the product of the absorbed dose in rads and certain modifying factors. The unit of dose equivalent is the rem. The equivalent SI unit of dose equivalent is the Sievert Sv). One Sv equals 100 rem.

Dosimeter (Personnel Monitoring Device). Devices designed to be worn or carried by an individual for the purpose of detecting and measuring an individual's exposure to ionizing radiation.

Gray (Gy). The International System unit of absorbed dose. One Gy is equal to an absorbed dose of 1 Joule per kilogram (100 rad).

High Radiation Area. Any radiation area accessible to personnel where ionizing radiation levels exist where individuals could receive a dose in excess of 100 mrem (1 mSv) in one hour.

Installation Radiation Safety Officer (IRSO). The individual appointed in writing at the installation, base, air station or other fixed activity responsible for coordinating the radiological controls program for sources of radiation under the control of that Installation.

Internal Audit and Inspection. A documented examination by a responsible person (i.e., RSO, assistant RSO, senior radiographer, supervisor, foreman, etc.) of the Radiation Safety Program or any element thereof (i.e., training, posting, operations, procedures, records, etc.), to verify compliance with requirements and established procedures.

Internal Radiation. Radiation from a source within the body as a result of deposition of radionuclides in body tissues.

Inventory or Physical Inventory Report. A report that typically comprises the equipment model type, serial number, drift tube/detector/source serial number, radioisotope, chemical and physical form, activity, date of activity, location or AAC or RUC, and custodian.

Ionizing Radiation. Electromagnetic (e.g., gamma or X-rays) or particulate (e.g., alpha or beta) radiation capable of producing ion pairs in its passage through matter.

Isotope. Nuclides that have the same number of protons in their nuclei (the same atomic number) but different numbers of neutrons (different mass numbers).

Kilo. Numerical (metric) prefix meaning a thousand (1,000) times (1×10^3); abbreviated as "k."

Leak Test. A Wipe Test to determine if a sealed source or instrument has lost its integrity by allowing leakage of radioactive material through holes or cracks. The test is normally performed by wiping the source or instrument with filter paper or absorbent material, and evaluating the paper or material to determine the presence of radioactive contamination, which indicates a leakage.

Licensed Material. Radioactive material that is received, possessed, used, or transferred under a general or specific license issued by the Nuclear Regulatory Commission (NRC).

Limited Radiation Worker. An individual who is assigned duties that may involve infrequent exposure to radiation and to radioactive material from licenses and unlicensed sources of ionizing radiation, whether in possession of the licensee (personnel identified in the license) or another person (personnel not identified in the license).

Mega. Numerical (metric) prefix meaning a million (1,000,000) times (1×10^6); abbreviated as "M."

Micro. Numerical (metric) prefix meaning one millionth part of (1/1,000,000, 0.000001, 1×10^{-6}). Abbreviated as Greek letter mu, "μ."

Milli. Numerical (metric) prefix meaning one thousandth part of (1/1,000, 0.001 or 1 X 10^{-3}). Abbreviated as "m."
Naval Radioactive Material Permit (NRMP). Authorization issued by the Naval Radiation Safety Committee in lieu of a specific license issued by the NRC.

Occupational Dose or Exposure. The exposure or dose received by an individual in a restricted area, or in the course of employment, in which the individual's assigned duties involve exposure to radiation and radioactive material from licensed and unlicensed sources of ionizing radiation whether in possession of the licensee or another person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research programs or as a member of the general public.

Quality Factor. A factor used for radiation protection purposes that accounts for differences in biological effectiveness between different radiations.

Rad. The unit of a radiation-absorbed dose equal to the absorption of energy in the amount of 100 ergs per gram in any material. For the purpose of this Order, one rad is considered to be the dose delivered by one roentgen of x-ray or gamma radiation. The term, mrad, refers to milli-rad or thousandth of a rad.

RADIAC. An acronym derived from "radioactivity detection indication and computation," a generic term applying to radiological instruments or equipment.

Radiation. For the purposes of this Order, any or all of the following ionizing radiations: alpha, beta, gamma or x-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles; but does not include sound or radio waves, or visible, infrared, or ultraviolet light.

Radiation Area. Area in which an individual could receive a radiation dose of five mrem or more in one hour, or 100 mrem or more in five consecutive days.

Radiation Incident. Unplanned loss of control of radioactive material or machine sources, which results in overexposures or

excessive levels, as defined in NAVSEA RASP Manual (S0420-AA-RAD-010).

Radiation Machine. Any device or equipment capable of generating ionizing radiation when the associated control panel area is operated, but excluding devices which produce radiation only by the use of radioactive materials.

Radiation Protection Assistant (RPA). Individual appointed in writing at the battalion, department or unit level, responsible for assisting the IRSO or CRSO in administering the radiological controls program.

Radiation Protection Survey. An evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive material or other sources of radiation under a specific set of conditions including a physical survey of the location of materials and equipment, and measurements of levels of radiation.

Radiation Safety Officer (RSO). A qualified individual, appointed by the Commanding Officer, who is responsible for those activities which assure adequate radiation protection.

Radiation Worker. An individual assigned duties that may involve frequent or routine exposure to radiation and to radioactive material from licensed and unlicensed sources of ionizing radiation, whether in possession of the licensee or another person.

Radioactive Commodity. Government property composed, in whole or part, of radioactive material; or any item that contains radioactivity equal to or in excess of limits established in 10 CFR 20, appendix C; or contains a specific activity greater that 0.002 microcuries per gram of radioactive material and is license/NRMP exempt to the end user.

Radioactive Material. Any material or combination of materials that spontaneously emit ionizing radiation.

Radioactive Waste. Any radioactive material that meets all of the following conditions: material no longer needed or usable by the Navy or Marine Corps; materials that cannot be returned to the manufacturer; materials that require controlled disposal;

and material that has been declared to be waste by an inventory control point.

Radiographer. Any individual who performs radiography or who, in attendance at the site, personally supervises radiographic operations and who is responsible to the Commanding Officer for assuring compliance with the requirements of NAVSEA RASP Manual (S0420-AA-RAD-010).

Radiography. Examination of the structure of material by nondestructive methods using radiation producing machines.

Radiological Accident. Loss of control of radiation or radioactive material which presents a hazard to life, health, or property, or which may result in any member of the general population exceeding exposure limits for ionizing radiation.

Rem. The unit of dose equivalent. The dose equivalent in rem is equal to the absorbed dose in rad multiplied by the quality factor. The term, "mrem," refers to millirem or thousandth of a rem.

Report of Physical Inventory and Reconciliation. This report typically includes: inventory report, total number of each item held under the NRMP or license for the current year, total number of each item held under the NRMP or license during the previous inventory, total number of new items received since the previous inventory, total number of items disposed of since the previous inventory, and a statement summarizing the difference between the current inventory and the previous inventory. For materials identified as lost, include copies of the reports, which identified the material as lost.

Restricted Area. Any area access which is controlled by the command for purposes of protection of individuals from exposure to radiation or radioactive material.

Roentgen. The special unit of x-ray or gamma exposure. One roentgen produces 2.58×10^{-4} coulombs per kilogram of air.

Sealed Source. Any radioactive material encased in a capsule designed to prevent leakage or escape of radioactive material.

Sievert (Sv). The International System (SI) unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in Gy multiplied by the quality factor (1 Sv = 100 rem).

Survey. See the definition for Radiation Protection Survey.

Unrestricted Area. Any area access, which is not controlled by the command for purposes of protection of individuals from exposure to radiation or radioactive materials, and any area used for residential quarters.

UNITED STATES MARINE CORPS
MARINE CORPS BASE
PSC BOX 20004
CAMP LEJEUNE, NORTH CAROLINA 28542-0004

IN REPLY REFER TO:
5104
Unit Code
Date

From: Commanding Officer/OIC/Director
To: Appointee

Subj: APPOINTMENT AS UNIT RADIATION PROTECTION ASSISTANT (RPA)

Ref: (a) MCO 5104.3A
(b) (Local Base Order/Unit Order/SOP)

1. You are hereby appointed as the Radiation Protection Assistant for (Name of Unit).

2. You will be guided in the performance of your duties by references (a) and (b).

3. You will attend annual radiation safety training provided by the Installation/Command Radiation Safety Officer.

4. You will maintain liaison with the Installation and Command Radiation Safety Officer for assistance and guidance with program requirements.

5. By return endorsement, you acknowledge this appointment and certify that you have read and understand the references.

I. M. INCHARGE

From: Appointee
To: Commanding Officer/OIC/Director

Subj: APPOINTMENT AS UNIT RADIATION PROTECTION ASSISTANT (RPA)

1. I acknowledge receipt of my appointment as the Radiation Protection Assistant (RPA) for (Name of Unit). Furthermore, I have read and fully understand the references.

R. P. ASSISTANT

Copy to:
IRSO