



DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
3000 MARINE CORPS PENTAGON  
WASHINGTON, DC 20350-3000

MCO 5104.3B  
SD  
17 Sep 2010

MARINE CORPS ORDER 5104.3B

From: Commandant of the Marine Corps  
To: Distribution List

Subj: MARINE CORPS RADIATION SAFETY PROGRAM

Ref: (a) SECNAVINST 5100.10J  
(b) OPNAVINST 5100.8G  
(c) OPNAVINST 6470.2B  
(d) OPNAVINST 6470.3A  
(e) NAVSEAINST 5100.18B  
(f) NAVSEA S0420-AA-RAD-010, Radiological Affairs Support Program Manual (NOTAL)  
(g) DTR 4500.9-R, "Defense Transportation Regulation," Part (2), June 2008  
(h) Nuclear Regulatory Commission (NRC) Master Materials License 45-23645-01NA (NOTAL)  
(i) SECNAV M-5210.1

Encl: (1) Hierarchy of Marine Corps Radiation Safety Program

1. Situation. References (a) through (i) require the Marine Corps to provide policy and assign responsibility for the administration of the Marine Corps Radiation Safety Program. This Order establishes the minimum program elements necessary to ensure compliance with references (a) through (i), and associated Naval Radioactive Materials Permits (NRMP) issued to Marine Corps commands. This Order has been entirely revised and contains a substantial number of changes that clarify many of the responsibilities of the program managers. Therefore, a complete review of this Order is required.

2. Cancellation. MCO 5104.3A.

3. Mission. Establish the formal Marine Corps Radiation Safety Program 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.

4. 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 in coordination with the Chief of Naval Operations (CNO) and in 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 the components of the Marine Corps Radiation Safety Program.

(2) Concept of Operations

(a) Per reference (a), the Secretary of the Navy assigned CNO the responsibility to establish and manage the Navy Safety and Occupational Safety and Health Program, including the promulgation of appropriate directives, in coordination with the Commandant of the Marine Corps (CMC) for those matters that affect the U.S. Marine Corps.

(b) The Nuclear Regulatory Commission (NRC) issued reference (h), a Master Materials License, to the Department of the Navy to control the receipt, acquisition, possession, use, and transfer of NRC regulated radioactive material at Navy and Marine Corps activities. Reference (d) established the Naval Radiation Safety Committee (NRSC) to provide control of all radioactive material used in the Navy and Marine Corps; except for nuclear propulsion reactors and associated radioactivity, nuclear weapons, and certain components of weapons delivery systems. NRMPs are used to maintain this control.

(c) Per reference (b), CNO described and assigned to Commander, Naval Sea Systems Command (COMNAVSEASYS COM) specific program responsibilities pertaining to ionizing radiation. The Radiological Affairs Support Program (RASP) is the vehicle used by COMNAVSEASYS COM to discharge the responsibility for radiological controls (RADCON). The RASP is the responsibility

17 Sep 2010

of NAVSEASYSKOM (SEA-04N) and includes all aspects of radiation safety with respect to the design, construction, and control of radiation from x-ray devices, accelerators, and radiographic units and from both licensed and non-licensed radioactive materials; including radioactive waste in the Navy and Marine Corps. NAVSEASYSKOM (SEA-04N) is the technical manager of the RASP and acts authoritatively on behalf of the CNO for all matters under the auspices of the RASP throughout the Navy and Marine Corps.

(d) The Chief, Bureau of Medicine and Surgery (BUMED), is responsible for the Radiation Health Program that serves the Navy and Marine Corps. The Radiation Health Program includes the areas of medical examinations, radiation protection standards, exposure records, and personnel dosimetry. Successful radiation protection programs include Radiation Health and Radiation Safety elements.

(e) Per reference (h), Naval Sea Systems Command Detachment, Radiological Affairs Support Office (NAVSEADET RASO) serves as technical support center to NAVSEASYSKOM (SEA-04N) and the NRSC. NAVSEADET RASO also provides guidance to Navy and Marine Corps commands in the following areas.

1. NRMP Program. NAVSEADET RASO, as the technical support center, provides guidance on applying for and maintaining individual command NRMPs.

2. Naval Low-Level Radioactive Waste (LLRW) Program. NAVSEADET RASO manages the Navy's LLRW Program that covers all LLRW generated by the Navy and Marine Corps excluding the Navy Nuclear Propulsion Program (NNPP). The program also provides contractual support for both command-specific and Naval Facilities Engineering Command (NAVFACENGCOM) managed radiological contamination and remediation projects at Navy and Marine Corps commands. The program is an integral part of the Department of Defense (DoD) LLRW Program managed by the U.S. Army.

3. Radiation Safety Training. NAVSEADET RASO provides initial qualification training to prospective Radiation Safety Officers (RSO) and Assistant Radiation Safety Officers (ARSO).

17 Sep 2010

(f) To accomplish radiation safety responsibilities in the Marine Corps, the Director, Safety Division (Dir SD) shall maintain an effective and unified Marine Corps Radiation Safety Program in coordination with COMNAVSEASYSCOM and appoint a member to the NRSC. The appointed NRSC member shall be knowledgeable in the Marine Corps Radiation Safety Program and shall function as liaison and central point of contact for radiological affairs within the Marine Corps. Enclosure (1) shows the functional chain of command for the Marine Corps Radiation Safety Program.

(g) Individual Marine Corps commands can submit applications for NRMPs to use NRC licensed material or sources of ionizing radiation in a local radiation safety program. Applications are submitted via the chain of command to Dir SD for endorsement and forwarding to NAVSEADET RASO for review and processing. When an NRMP is issued, the command must comply with its locally developed operating procedures, NRMP requirements, and applicable Federal regulations. Non-compliance with NRMP requirements may adversely affect not only the command's readiness by causing a stoppage of operations related to or requiring a NRMP, but also all NRMPs associated with reference (h). Those permits cover many areas of use to include medical treatment of patients, repair of ships and aircraft, and research and development of war fighting technologies.

(h) Industrial x-ray radiography represents a potential for serious radiation exposure to x-ray radiography personnel and members of the general public in the vicinity of the radiography operations. Because of this potential for personal injury, it is incumbent upon each Marine Corps activity that conducts x-ray radiography to operate their programs in strict compliance with established standards promulgated in reference (f), the NAVSEA RASP Manual. Reference (f) provides the minimum standards for industrial x-ray radiography radiation safety. The radiation safety requirements listed in that manual for x-ray radiography are the minimum that each Marine Corps activity shall meet. Individual commands shall establish standard operating procedures (SOP) with additional radiation safety requirements for their respective operations as dictated by local conditions.

17 Sep 2010

b. Subordinate Element Missions

(1) Director, CMC (SD)

(a) Appoint in writing, a qualified Naval Radiation Health Officer (RHO) to serve as Senior Marine Corps Health Physicist at CMC (SD). This RHO shall:

1. Oversee management of all NRMPs issued to Marine Corps commands and take appropriate actions to ensure compliance with this Order and all other applicable directives.

2. Serve as a voting member of the NRSC and function as the liaison and central point of contact for radiological affairs within the Marine Corps.

3. Develop and implement Marine Corps policies regarding the Radiation Safety Program.

4. Develop, maintain, and provide training programs for material and processes not covered by NAVSEADET RASO training programs, to all Marine Corps Radiation Safety Officers and Managers.

5. Provide advice to Marine Corps commands on radiation safety matters.

6. Coordinate with U.S. Army RSO for matters regarding equipment that is owned by the Marine Corps and contains radioactive material that is issued pursuant to a U.S. Army NRC license.

7. Except as specified in an NRMP, serve as the primary point of contact for the reporting of incidents involving applicable radioactive materials or devices. This includes generally licensed devices, license-exempt devices, and items not otherwise specifically permitted for use in the Marine Corps (e.g. unknown radioactive materials or items that bear the radioactive materials symbol that may belong to the Marine Corps).

8. Conduct biennial (every two years) assessments of all Marine Corps NRMP and x-ray radiography operations.

17 Sep 2010

9. Assist in coordinating the procurement of radioactive commodities by Marine Corps commands to ensure adequacy of permit coverage and establishment of radiation safety.

10. Provide technical assistance that is beyond the ability (training and experience) of local resources.

11. In coordination with the Capabilities Processing Branch within the Capabilities Development Directorate (CDD) at Marine Corps Combat Development Command (MCCDC), review all Urgent Universal Needs Statements (UUNS) through the virtual UUNS (vUUNS) system. This review will focus on any capabilities solution or recommendation that may have ionizing radiation components.

(2) Commanding General, Marine Corps Logistics Command (CG MARCORLOGCOM)

(a) Coordinate the Inter-Service Support Agreement with the Defense Logistics Agency (DLA) for radioactive material storage and distribution requirements.

(b) Provide disposition instructions for radioactive commodities in the Marine Corps supply system through Item Managers.

(c) Ensure Item Managers are adequately trained and knowledgeable in the requirements of demilitarization and transportation of items that contain radioactive materials.

(d) Direct and maintain inventories of MARCORLOGCOM NRMP and NRC licensed commodities. Provide completed NRC licensed commodity inventories to the Army RSO for reconciliation.

(e) Provide special handling instructions for equipment that contains radioactive material via appropriate supply instructions.

(f) Assign appropriate authority, responsibility, and funding to the MARCORLOGCOM Radiological Controls Office to ensure compliance with this Order and all NRMPs issued to CG MARCORLOGCOM.

(g) Ensure adequate resources are available for supporting radioactive sample analysis and instrument calibration as a service to other Marine Corps commands as required by specific NRMP.

(3) Commander, Marine Corps Systems Command

(a) Coordinate the development, procurement, acquisition, testing, evaluation, and distribution of systems involving ionizing radiation sources, or equipment containing radioactive material with CMC (SD) and MARCORLOGCOM/RADCON. This coordination ensures compliance with new or established NRMPs or NRC licenses. Coordination with MARCORLOGCOM will ensure that materials are managed properly by MARCORLOGCOM, which is responsible for the maintenance, repair, replacement, storage, and distribution of materials brought into the Marine Corps inventory.

(b) Coordinate the procurement of any generally licensed or license-exempt radioactive devices with CMC (SD).

(c) Assign, in writing, a Command Radiation Safety Manager (CRSM) to oversee NRMP compliance prior to receipt, use, handling, and storing equipment that contain radioactive material or produce ionizing radiation.

(d) Incorporate Marine Corps radiation safety requirements in the research, development, testing, and evaluation phases for an end item or system component that contains radioactive material or is a source of ionizing radiation. Make appropriate provisions for specific licensing and disposition requirements when planning life-cycle management of new systems.

(e) Coordinate with CMC (SD) the promulgation of documents for radioactive commodities to ensure the availability of training, maintenance, and pertinent regulatory information.

(4) Commanding General, Marine Corps Combat Development Command; Commander, U.S. Marine Corps Forces Command; Commander, U.S. Marine Corps Forces Pacific; Commander, U.S. Marine Corps Forces Reserve; Commander, U.S. Marine Corps Forces Special Operations Command; and Commanding General, Marine Corps Recruiting Command

17 Sep 2010

(a) Ensure subordinate commands adhere to the requirements of this Order and applicable NRMP.

(b) Publish procedures implementing formal radiation safety programs pursuant to the requirements of this Order and commensurate with command operations utilizing radioactive materials.

(c) Assign, in writing, a Command Radiation Safety Manager (CRSM) to oversee radiation safety compliance of subordinate commands as applicable.

(5) Commanding General, Training and Education Command

(a) Ensure plans of instruction and training manuals for equipment containing radioactive materials or capable of producing ionizing radiation, include basic radiation safety information and training.

(b) Coordinate with CMC (SD) on obtaining subject matter expertise for the radiation safety training material.

(6) Radiation Safety Officer (RSO). The person directly responsible for the radiation safety program associated with a NRMP or x-ray radiography is called the RSO.

(a) Prior to assuming duties as the RSO, the following are required:

1. Successful completion of the applicable RSO Course(s) provided by NAVSEADET RASO.

2. Successful completion of the USMC Radiation Safety Program Management course provided by CMC (SD).

3. For NRMP RSO, a signed NRMP amendment listing the RSO on the permit.

(b) The RSO shall:

1. Per reference (f), be appointed in writing by the commanding general, commander, or commanding officer directly (i.e., not "By direction") and document in writing their acceptance of the responsibilities and position of RSO.

2. Have independent authority to stop operations associated with their NRMP or x-ray program that they consider unsafe.

3. Have sufficient time and commitment from management to fulfill their duties and responsibilities as outlined in their specific NRMP, all radiation safety directives and their local SOP, to ensure that radioactive materials and/or sources of ionizing radiation are used in a safe manner.

4. Have direct access to the commanding general, commander, or commanding officer for all matters concerning radiation safety.

5. When required by an NRMP or as needed, recommend to the commanding general, commander, or commanding officer to assign an Assistant Radiation Safety Officer (ARSO) with the same training and qualifications as the RSO.

6. Ensure that a radiation safety review, audit, and inspection program is implemented and results are forwarded to the commanding general, commander, or commanding officer via the chain of command and that program deficiencies are corrected expeditiously.

7. The RSO shall provide an annual commander's brief to the commanding general, commander, or commanding officer on the status of the radiation safety program for which they are responsible, to include at a minimum, all inspections or assessments since the last commander's brief and any NRMP actions or correspondence.

8. Ensure strict compliance with all applicable regulations, instructions, and Orders that are germane to the Radiation Safety Program, to include any specific conditions associated with an NRMP.

(c) Per reference (f) and to maintain proficiency in radiation safety practices and to remain current with guiding regulations, the RSO and, when applicable the ARSO, shall attend, at a minimum, three out of five annual RSO conferences provided by NAVSEADET RASO. If this requirement cannot be met, the RSO and ARSO shall be required to successfully complete the RSO course again within the 5-year period after initial completion.

17 Sep 2010

(d) An RSO may designate a Radiation Safety Manager (RSM) to assist in managing the administration and logistics of a NRMP, such as one that is located outside the geographical area of the NRMP RSO.

(7) Radiation Safety Manager (RSM). The RSM is the individual responsible for the coordination and management of a Radiation Safety Program who is not otherwise listed on a NRMP or x-ray radiography program as a RSO. A qualified RSO may also serve as the RSM. The RSM may serve at any level command.

(a) RSM should be designated as:

1. Major Command Radiation Safety Manager. The major command, or Marine Force (MARFOR) RSM, is the individual appointed in writing at the major command level. Because major commands do not typically possess radioactive devices, the major command RSM will normally be responsible for oversight of subordinate command RSM, RSO, and their associated programs. Whenever possible, assignment of the major command RSM should be from the major command safety office. The MARFOR RSM is strongly encouraged, but not required, to attend the annual RSO conferences provided by NAVSEADET RASO.

2. Command Radiation Safety Manager (CRSM). The CRSM is the individual appointed in writing at the Marine Expeditionary Force (MEF) or Major Subordinate Command (MSC) level who is responsible for coordinating the Radiation Safety Program for sources of ionizing radiation under the control of that MEF or MSC. Whenever possible, assignment of the CRSM should be from the command safety office.

3. Installation Radiation Safety Manager (IRSM). The IRSM is the individual appointed in writing by the commanding general, commander, or commanding officer at the installation, base, air station, combat center, or other fixed activity, who is responsible for coordinating the Radiation Safety Program for sources of ionizing radiation under the control of that installation, as well as maintenance of an inventory of all radioactive materials physically located on the installation. Whenever possible, assignment of the IRSM should be from the installation safety office.

(b) As appropriate to the level of the command, the RSM general duties and responsibilities include, but are not limited to:

1. Develop and implement the appropriate level radiation safety SOP, and publish and distribute applicable messages, bulletins, or notices, as required.

2. In coordination with the installation DLA office and the installation logistics office, develop and implement procedures for shipping radioactive materials. Those procedures shall establish and maintain an electronic logbook in spreadsheet format. At a minimum, the logbook shall contain the device name, national stock number (NSN), serial number (if applicable), radioactive isotope, original radioactive quantity (original activity in curies (Ci) and terabequerels (TBq)), pre-shipment radiation surveys, date, time, and name of person packaging the items.

3. Maintain inventories and storage locations of radioactive materials and commodities located on the installation and provide locations of that material to the installation fire department, custodian, and emergency response personnel. As applicable, provide periodic training to these organizations on emergency response procedures involving radiation sources.

4. Coordinate the procurement of any generally licensed or license-exempt radioactive devices with CMC (SD).

5. Establish local procedures and maintain close liaison with the Defense Reutilization and Marketing Offices (DRMO) and other base organizations to prevent the unauthorized transfer or delivery of any radioactive materials to the DRMO. This includes license-exempt devices.

6. Maintain liaison with RSO and RSM within the installation or command that have been appointed oversight of specific radiation safety programs (RADIAC calibration laboratory, x-ray radiography, etc.).

7. Coordinate and direct the training and actions of Radiation Protection Assistants (RPA) in the administration of command radiation safety programs.

(c) RSMs shall coordinate the disposal or transfer of any unwanted radioactive material from the command with CMC (SD) via their chain of command and request disposition instructions from the MARCORLOGCOM Item Manager for any materials controlled under a MARCORLOGCOM NRMP.

(d) The RSM shall successfully complete Radiation Safety Manager training provided by CMC (SD) within 3 months of assuming duties as RSM.

(8) Radiation Protection Assistant (RPA). The RPA is the unit-level, collateral duty radiation safety professional, and is appointed to assist the RSO or RSM in administration of the command radiation safety program.

(a) RPAs shall successfully complete a radiation safety training program provided by the RSO or RSM within three months of assuming duties as RPA.

(b) RPAs shall maintain an inventory of radioactive materials within the unit.

(9) Responsible Officer (RO). The unit having custody of licensed or permitted radioactive commodities must assign an RO. The RO shall receive radiation safety training that is commensurate with one's duties and responsibilities. The RO shall:

(a) Perform or ensure the conduct of radiation safety program requirements for the receipt, handling, storing, physical inventory, packaging, and shipping of licensed sources of ionizing radiation.

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

c. Coordinating Instructions

(1) Unwanted Radioactive Material (URM) and Low Level Radioactive Waste (LLRW)

(a) In the Marine Corps, unwanted radioactive material includes items that contain intact and unbroken radioactive sources for which the possessing command has no further use. These items include, but are not limited to, license-exempt devices, e.g., advanced combat optical gunsights (ACOG), rifle combat optics (RCO), and tritium compasses. RSOs and RSMs should contact CMC (SD) via their chain of command for disposition instructions on these items.

(b) Only NAVSEADDET RASO can officially designate items as LLRW for disposal and transfer as such. Therefore, close coordination with NAVSEADDET RASO is required to ensure proper classification and final disposition of anticipated LLRW.

(c) LLRW includes devices that contain radioactive material or any item which is contaminated with radioactive material, or any radioactive device which is known to be broken and leaking radioactive material. Once designated as LLRW, the RSO will work directly with NAVSEADDET RASO to coordinate the disposal. The RSM shall contact CMC (SD) via their chain of command for all matters concerning actual or potential LLRW under their purview.

(2) Transportation of Radioactive Materials (RAM)

(a) The transportation of radioactive materials is regulated by Title 49, Code of Federal Regulations (49 CFR) and parts of Title 10, Code of Federal Regulations (10 CFR) and the Defense Transportation Regulations.

(b) Shipments of RAM shall be carefully coordinated with the local DLA office and the installation Traffic Management Branch, as applicable, to ensure all regulations pertaining to shipment of RAM are followed.

(c) A RAM movement form shall accompany all radioactive material movements to include on-base transfer from one building to another, transfer from one command to another and for any RAM being prepared for shipment.

(3) Submit all recommendations for revisions of this Order to CMC (SD), via the appropriate chain of command.

(4) Commanders shall assure that their radiation safety programs reflect command support and fulfill the requirements of licenses, NRMP, and applicable host-nation and federal regulations.

5. Administration and Logistics

a. Submit recommendations to change this Order to CMC (SD) via the chain of command.

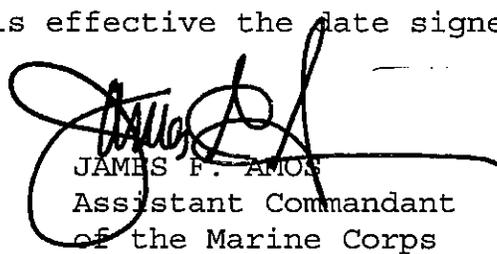
b. Any discrepancies between references (a) through (h) and this Order shall be clarified by contacting the Senior Marine Corps Health Physicist at CMC (SD).

c. Records created as a result of this directive shall include records management requirements to ensure the proper maintenance and use of records, regardless of format or medium, to promote accessibility and authorized retention per the approved records schedule and reference (i).

6. Command and Signal

a. Command. This Order is applicable to the Marine Corps Total Force. It 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.

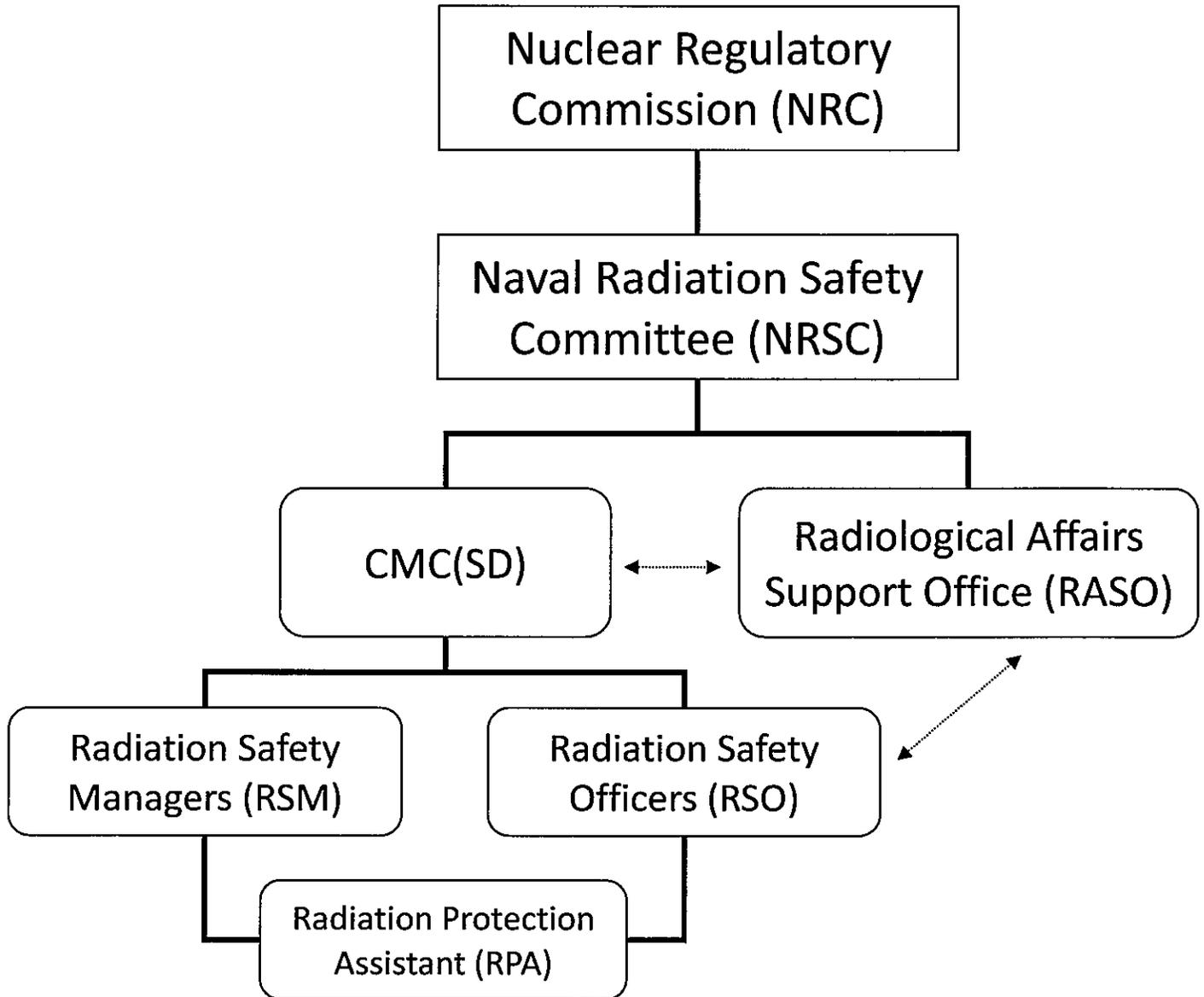


JAMES F. AMOS  
Assistant Commandant  
of the Marine Corps

DISTRIBUTION: PCN 10207380000

Copy to: 7000190 (10)  
8145005 (2)  
7000260/8145005 (2)  
7000099/8145001 (1)

## Hierarchy of Marine Corps Radiation Safety Program



- Direct lines of communication \*
- ..... Alternate lines of authorized communication

*\*Although RSMs and RSOs have direct lines of communication with higher commands, they should continue to keep their chain of command informed.*