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MCBHO 5100.21E
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MARINE CORPS BASE HAWAII ORDER 5100.21E

From: Commanding Officer
To: Distribution List

Subj: MARINE CORPS BASE HAWAII RADIATION SAFETY PROGRAM

Ref: (a) SECNAVINST 5100.10K
(b) OPNAVINST 5100.23H w/CH-1
(c) OPNAVINST 6470.2D
(d) OPNAVINST 6470.3B
(e) NAVSEAINST 5100.18B
(f) NAVSEA S0420-AA-RAD-010 Rev 2A, Radiological Affairs Support Program Manual (NOTAL)
(g) MCO 5100.29C
(h) DTR 4500.9-R, "Defense Transportation Regulation," Part (2), July 2022
(i) 10 CFR 71
(j) 49 CFR 173
(k) Nuclear Regulatory Commission (NRC) Master Materials License 45-23645-01NA(NOTAL)
(l) SECNAV Notice 5210
(m) SECNAV M-5210.1
(n) MCO 5210.11F
(o) 5 U.S.C. §552a
(p) SECNAVINST 5211.5F

1. Situation. The references require Marine Corps Base Hawaii (MCBH) to provide policy and assign responsibility for the administration of the Marine Corps Radiation Safety Program (MCRSP). This Order establishes the minimum program elements necessary to ensure compliance with the references, and associated Naval Radioactive Materials Permits (NRMPs) issued to Marine Corps commands. This Order has been revised and contains a substantial number of changes that clarify and outline requirements as well as set new standards for training. Therefore, a complete review of this Order is required. Reference (g) will henceforth be referred to as the MCRSP in this Order.

2. Cancellation. MCBHO 5100.21D.

3. Mission. Comply with the MCRSP aboard MCBH 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.

4. Execution

a. Commander's Intent and Concept of Operations

(1) Commanders Intent

(a) Enhance unit and individual readiness by maintaining an effective Radiation Safety Program in coordination with the Chief of Naval Operations and in compliance with pertinent regulations.

(b) Control sources of ionizing radiation to minimize personnel exposure to a level As Low As Reasonably Achievable (ALARA) and to prevent contamination of personnel, equipment, and facilities.

(c) Ensure establishment of emergency plans for the protection of personnel and containment of radioactive material released due to an accident, fire, explosion, or natural disaster.

(d) Provide guidance and requirements for implementing the components of the MCRSP.

(2) Concept of Operations

(a) The provisions set forth in this Order identify specific command responsibilities and establish program requirements to ensure compliance with the U.S. Nuclear Regulatory Commission (NRC) regulations, Naval Sea Systems Command Detachment, Radiological Affairs Support Office (NAVSEADET RASO) permit requirements, associated orders to each permit, Marine Corps Radiation Safety Program requirements, and State and Federal regulations.

(b) This Order is applicable to all subordinate and tenant commands aboard MCBH.

b. Subordinate Element Missions. Commands in possession of any radioactive assets (henceforth utilized, as appropriate, to

represent material, devices, and commodities) shall comply with references (f) through (k) and the MCRSP.

c. Commanding Officer (CO), MCBH. The CO, MCBH will retain overall responsibility for the protection from radiological hazards to personnel aboard MCBH and ensure all personnel affected by the provisions of this Order familiarize themselves with the contents. The CO, MCBH shall establish, approve and maintain an effective command radiation safety program, and issue a command endorsed Radiological Affairs Support Program (RASP) instruction incorporating the requirements of references (b), (g), and other Navy and Marine Corps directives and Federal regulations, as applicable. The CO, MCBH shall ensure measures are established for controlling ionizing radiation sources so radiation exposure to personnel is ALARA and no greater than the limits established in reference (d). The CO, MCBH will assign an installation Radiation Safety Officer (RSO) and an Assistant Radiation Safety Officer (ARSO), in writing, only after he/she has completed the required training as outlined in reference (a). For shore commands, the CO, MCBH shall establish a written agreement with the supporting Medical Treatment Facility (MTF) for services provided by the MTF that are associated with the RASP (e.g., radiation medical exams, dosimetry, and emergency response).

d. RSO/ARSO. The RSO/ARSO will be appointed upon successful completion of the Radiation Safety Officer Course (S-4J-0016) and the Commandant of the Marine Corps Safety Division (CMC (SD)) Radiation Safety Officer/Radiation Safety Manager Course, per reference (a). The RSO/ARSO will have direct access and report directly to the CO, MCBH on all matters pertaining to radiation safety. For command RASP operations to take place, the RSO shall be able to respond to an on-site radiological incident at the command within the time required for normal commuting (less than two hours), unless an ARSO is designated to provide oversight coverage. The RSO does not have to be physically present when RASP operations are being performed. Responsibilities include:

(1) Management, coordination and oversight of the radiation safety program for all MCBH organizations and tenant commands. Develop and implement the installation radiation safety order and publish and distribute applicable installation messages, bulletins or notices, as required. Maintain records

and documentation that demonstrate compliance with the references NRMP conditions and pertinent Federal regulations.

(2) Ensure all personnel affected by the program are properly trained in radiation safety, emergency procedures, harmful effects of radiation, proper reporting of defects and non-compliance and other topics deemed appropriate.

(3) Maintain NRMP radioactive commodities or sources, and inventory reports of the installation assets per reference (b). Maintain a current inventory of all RASP radiation sources (machine and material) and ensure all sources are secured against loss, unauthorized use, or unauthorized disposal. RSO approval is required prior to the purchase or receipt of radioactive material or ionizing radiation producing machines, except commodities in the Navy stock system.

(4) Perform periodic radiation safety audits of base and tenant activities and/or visiting agencies subject to references (a) through (d). This specifically includes preparing an assessment for the Commander, CO, or Officer in Charge (OIC) annually on the status of the command's RASP. In addition, keep the Commander, CO, or OIC informed of significant events and changes to the status of the program. Additionally, the RSO/ARSO shall provide an annual RASP leadership briefing that includes personnel qualifications and experience of the RSO/ARSO, management involvement, radiological safety culture, operating and emergency procedures, training and evaluation program, record and document control system, written audit program and results of the Annual Program Review.

(5) Conduct and document an annual review of all operating and emergency procedures pertaining to RASP radioactive material, devices containing radioactive material and machine sources of ionizing radiation to ensure compliance with pertinent NRMPs, Navy and Marine Corps directives and Federal regulations. Assist supervisors in preparing any changes to these procedures.

(6) Provide MCBH tenant commands technical survey and training assistance on matters pertaining to the references. Coordinate and direct the actions of the tenant command/unit Radiation Safety Managers (RSMs), Unit Radiation Safety Manager (URSM) and Radiation Program Assistants (RPAs) in the administration of their Radiological Control (RADCON) Programs.

Ensure surveys and inspections that demonstrate compliance with the requirements in the references and other pertinent Navy and Marine Corps directives, specific NRMP conditions, and Federal regulations are properly performed.

(7) Ensure proper handling and control of radioactive materials including receipt, storage, shipping and disposal operations at installation activities and tenant commands. Maintain adequate and appropriate equipment, materials, supplies and references necessary to perform support/response services and neutralize potential mishaps. Develop, coordinate, approve and participate in training personnel as required by reference (b).

(8) Register all applicable machine sources of ionizing radiation with the NAVSEADET RASO. The RSO/ARSO shall initiate a Utilization Log for use of any x-ray fluorescence (XRF) analyzer; operators must enter and maintain the log entries for each use of the XRF. The operator and RSO/ARSO shall validate all log entries prior to each use. The Utilization Log shall remain with the instrument for the life of the instrument. Data from the Utilization Log shall be downloaded periodically into a tracking database by the RSO/ARSO or a qualified operator.

(9) Ensure RASP management reviews, audit, and inspections are executed, and identified deficiencies are tracked and corrected expeditiously through the RASP Deficiency Report (RDR) program. As per reference (b), RDRs shall be retained for three years, and copies of RDRs shall be sent to NAVSEADET RASO via official correspondence.

(10) Ensure radioactive material is received and shipped according to the requirements of reference (b) and Federal regulations. RSO approval is required prior to the purchase or receipt of radioactive material or ionizing radiation producing machines, except for commodities in the Navy stock system. Coordinate the procurement of any generally licensed or license-exempt radioactive devices with the Logistics Radiation Safety Officer and/or CMC (SD).

(11) Coordinate the collection, storage and disposal of all Low-Level Radioactive Waste (LLRW) aboard MCBH. Items identified as LLRW should be double bagged and the RSO/ARSO will be contacted at the Base Safety Directorate, building #279, phone number (808) 257-1830, for disposition instructions.

Surplus radioactive commodities will not be transferred to the Defense Reutilization and Marketing Office (DRMO) but will be retained until disposition instructions are received from the RSO/ARSO via the inventory control point. Under no circumstance will material marked as "radioactive" be disposed of as uncontrolled refuse for incineration or burial in unrestricted landfills. A full inventory of any radiological items to be disposed of will be provided to the RSO/ARSO. The inventory will contain the following information:

(a) Name of radioactive isotope.

(b) The amount of activity of the radioactive source, stated in the international unit of Becquerels.

(c) Owning/responsible organization point of contact and phone number.

(d) National Stock Number (NSN) and nomenclature of the end item that the radioactive source is a component of or is installed.

(12) The installation RSO/ARSO will coordinate medical support requirements with the Naval Medical Clinic and Radiation Health Officer (RHO) per references (b) through (d) to include:

(a) Initial management of irradiated or contaminated personnel.

(b) Medical examinations for occupationally exposed personnel.

(c) Medical exposure records.

(d) Personnel dosimetry.

(e) Radiation protection standards.

(13) Provide a map of storage locations of radioactive materials and commodities to Federal Fire Department (FFD) and emergency response personnel. Ensure periodic training is conducted by the organizations on emergency response procedures involving radiation sources.

(14) Establish local procedures and maintain close liaison with base organizations to prevent the unauthorized transfer or delivery of any radioactive materials to the DRMO.

(15) Conduct and document semi-annual reviews (March and September) of the adequacy of the content and implementation of the RADCON Program and use the Radiological Controls Office checklist to document inspections. These semi-annual reviews will be briefed directly to the CO. Conduct quarterly RADCON audits and annotate discrepancies/deficiencies as applicable.

(16) All RSOs and ARSOs will maintain proficiency by completing the training and requalification requirements listed in reference (b). The ARSO shall meet all the requirements of reference (b) and shall assist the RSO in carrying out the RSO duties. The ARSO shall perform the duties and responsibilities in the absence of the RSO.

e. RSMs: The RSM (henceforth refers generically to all RSMs (URSM and IRSM)) is the individual responsible for the coordination and management of a Radiation Safety Program at all levels of command via the guidance of the respective RSO (when considering specifically licensed items), higher headquarters, and CMC (SD). The RSM will support the entire spectrum of radioactive assets throughout the Marine Corps.

(1) An RSM shall manage all specifically licensed and generally licensed radioactive assets in direct support of the RSO's NRMP at their command.

(2) For all exempt quantity assets an RSM shall ensure a qualified RPA is assigned responsibilities over the assets.

(a) Requests for exemption from requiring an RSM within exempt quantity only programs will be made directly to CMC (SD) via the chain of command.

(b) Exemptions shall expire after three years or if the command acquires a specifically or generally licensed asset, whichever comes first.

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

(a) Develop and implement the appropriate level radiation safety Standard Operating Procedure (SOP), and publish and distribute applicable messages, bulletins, or notices, as required.

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

(c) Maintain inventories and storage locations of radioactive assets located within their purview and provide the quantities and locations of those assets to the IRSM. If there is no IRSM assigned within your installation, then report locations of radioactive inventories to the fire department and emergency response personnel and as applicable, provide periodic training to these organizations on emergency response procedures involving radiation sources.

(d) Coordinate the procurement of any generally licensed or license-exempt radioactive assets with CMC (SD) and Marine Corps Logistics Command (MARCORLOGCOM), RADCON Division. The MCRSM will be notified of any acquisition and the IRSM will also receive notification prior to procurement of said asset and upon receipt.

(e) Establish local procedures and maintain close liaison with the Defense Logistics Agency Disposition Services (DLA-DS) and other base organizations to prevent the unauthorized transfer or delivery of any radioactive assets to the DLA-DS. This includes license-exempt radioactive assets.

(f) Maintain liaison with the RSO and other RSMs within the installation or command that have been appointed oversight of specific radiation safety programs (radioactivity, detection, indication and computation (RADIAC) calibration laboratory, x-ray radiography, etc.).

(g) Serve as the point of contact for radiological incident reporting, to include receiving initial notification of broken, damaged, or leaking radiological sources, or the receipt of a radiological shipment with damaged packaging. The RSM shall contact the IRSM (Base Safety if no IRSM exists) as soon as possible when such an incident transpires, to discuss appropriate actions and receive guidance on response and cleanup. The RSM shall make notification of such incidents to the NRMP RSO and CMC (SD) and provide support for leak test and contamination survey requirements resulting from such incidents per reference (g).

(h) Report to the IRSM any requests for or identification of external sources of ionizing radiation being brought onto the installation by outside contractors, DoD services, or Federal agencies. Examples include, but are not limited to, x-ray/gamma radiography operations, moisture density testing, or testing of research and development equipment. In the absence of an IRSM contact CMC (SD) with the pertinent information.

(i) Conduct leak tests and contamination surveys per the Marine Corps Orders specified in reference (g).

(j) Coordinate and track the initial and periodic training and actions of appointed Radiation Protection Assistants in the administration of command radiation safety programs. Prepare and conduct command specific training with new RPAs to familiarize them with the command and assets for which they will be responsible.

(k) Retain responsibility for RPA’s actions that are appointed to assist them in their radiation safety program.

(4) RSMs shall coordinate the disposal or transfer of any unwanted radioactive assets from the command with CMC (SD) via their chain of command for licensed or generally licensed radioactive assets and request disposition instructions from the appropriate Item Manager per reference (g).

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

(a) CMC (SD) owns RSM training and coordinates on-site training at each Marine Expeditionary Force (MEF) annually and upon request given sufficient attendees, lead-time, and resources. Requests for RSM training shall be sent to CMC (SD) and MARCORLOGCOM, RADCON Division for evaluation. CMC (SD) approves the MARCORLOGCOM, RADCON Division announcement released in January each year, which provides COP, RSM training, and site audit dates.

(b) In order to maintain proficiency in radiation safety practices and to remain current with guiding regulations, all RSMs designated in writing shall accumulate three continuing education credits approved by CMC (SD) within the previous five years. Credits may be earned by attending the annual USMC COP (one credit attendee, two credits lecturer), and RSM-RADCON (RSM-R) training (two credits). If this requirement cannot be met, the RSM shall be required to successfully complete the RSM course again within the five-year period after initial completion.

f. Unit Radiation Safety Manager (URSM). URSMs shall be E-5 and above and designated to support specifically licensed and generally licensed radioactive assets in which the RSO/ARSO responsible for said license is not geographically located. Designation letters for URSMs shall be forwarded to the IRSM. Armories which manage permitted H-3 sighting assets shall have a qualified and designated URSM. If an armory has multiple cages one URSM is sufficient but the individual cages shall have a qualified and designated RPA. Repairable Issue Points (RIP) shall have a qualified and designated URSM as well.

g. Installation Radiation Safety Manager (IRSM). The IRSM is the individual designated 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 assets physically located on the installation.

(1) Whenever possible, assignment of the IRSM should be from the installation safety office.

(2) The IRSM shall successfully complete RSM-R training provided by NAVSEADET RASO within six months of assuming the duty of IRSM.

(a) Once qualified the IRSM shall retake RSM-R within five years as part of their continuing education credits or requalification per reference (g).

(b) IRSMs who also hold the title of RSO (excludes radiographer RSOs) are also required to attend RMS-R for continuing education credits or requalification's per reference (g).

(3) Upon notification of a spill or breach of radioactive assets by a tenant command on the installation, the IRSM shall direct recovery actions in coordination with the NRMP RSO and/or CMC (SD). The tenant command RSM/RPA will provide any/all support necessary to the IRSM to ensure a safe recovery from the spill or breach. This in no way makes the IRSM responsible for any reporting or disposition requirements.

(4) The IRSM's contact info shall be posted within all components of an installation that store/use radioactive assets to include instructions to contact the IRSM in the event of theft, loss, or damage should the designated RSM/RPA not be available or an RSM/RPA is not assigned to the space.

(5) The IRSM as applicable, shall provide periodic training to emergency response organizations on response procedures involving radiation sources within the scope of their installation.

(6) The IRSM shall report inventory locations and quantities of all radioactive assets on the installation to the fire department, custodians, and emergency response personnel upon initial receipt of assets, change of location, and annually.

(7) The IRSM shall report to CMC (SD) any new requests for or identification of any external sources of ionizing radiation being brought onto their installation by outside contractors, DoD services, or Federal agencies, whether for storage or utilization, to ensure a Radiological Contract Oversight Management Authorization (RCOMA) has been processed as necessary per reference (f). Examples include, but are not

limited to, x-ray/gamma radiography operations, moisture density testing, or testing of research and development equipment.

(8) Designation letters for IRSMs shall be forwarded to CMC (SD).

h. RPA. The RPA is the unit-level, collateral duty radiation safety professional, and is appointed to assist the RSM in administration of the command radiation safety program. RPAs shall be assigned to support license exempt radioactive assets. An RPA is not authorized to assume the responsibility for the management of specifically licensed or generally licensed radioactive assets in the stead of an RSM with the exception of deployable units where an RPA can support the program in the stead of an RSM until another RSM can be trained. Under these circumstances the RPA shall be designated in writing as the RSM, assuming the responsibilities of the program, and will thus be required to attend RSM training within three months unless another candidate has been identified to replace the RSM.

(1) RPAs shall successfully complete a radiation safety training program provided by the CMC (SD) within three months of assuming duties as RPA and shall complete an annual refresher thereafter. CMC (SD) provides the training material to RSMs to administer all RPA training.

(2) RPAs shall maintain an inventory of radioactive assets within the unit.

(3) In the event any inventory items, under the cognizance of an RPA, are broken, damaged or leaking the RPA shall contact the IRSM, via the chain of command, to receive guidance on response, cleanup, and disposal of the radioactive asset.

(4) Report to the IRSM, via the chain of command, any requests for or identification of external sources of ionizing radiation being brought onto the installation by outside contractors, DoD services, or Federal agencies. Examples include, but are not limited to, x-ray/gamma radiography operations, moisture density testing, or testing of research and development equipment. In the absence of an IRSM contact CMC (SD) with the pertinent information.

i. Responsible Officer (RO). The unit having custody of licensed or permitted radioactive assets must assign an RO. The RO is appointed in writing by the Commanding Officer and assumes custodial responsibility for property and accountability of supplies for units. The RO shall receive radiation safety training that is commensurate with one's duties and responsibilities. The RO shall be responsible for the following actions:

(1) 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.

(2) Respond to radiological inventory inquiries within specified tasking timelines. Semi-annual inventories will be conducted and submitted to the permit holder within 30 days of tasking date.

(3) Obtain the signature on inventories of radiological assets from the assigned Commanding Officer (CO)/ Accountable Officer (AO) in accordance with reference (g).

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

j. Tenant Commands. Tenant commands will comply with the requirements prescribed in references (a), (b) and (d). Tenant commands possessing or utilizing ionizing radiation or registered machine sources and devices will:

(1) Establish and maintain a formal and active radiation safety program, per references (a), (b) and higher authority.

(2) Appoint, in writing, a qualified unit RSO, a qualified unit RSM, or a qualified unit RPA, as applicable. The tenant command RSM, RSO and/or RPA are critical members of the command and are appointed to maintain the tenant command's RADCON program as well as to assist the MCBH RSO in administration of the MCBH RADCON Program, as required. It is essential to consider appropriate appointment level at crucial locations having custody of licensed, exempted or permitted radioactive commodities. Such areas may include areas of use, maintenance, transportation, storage, and facilities involved with packaging, receipt and shipment of radioactive commodities.

(3) Establish, use, and maintain a utilization log for:

(a) All unsealed radioactive material and sources.

(b) All radioactive instrument check sources.

(c) All registered machine sources and devices.

(d) Use of sealed radioactive sources, with activities greater than 10 times the quantities listed in reference (e), Appendix C, unless otherwise authorized by a NRMP.

k. Provost Marshal. Military police personnel will be responsive to the On-Scene Commander or RSO at a radiological mishap site and will:

(1) Evacuate all non-essential personnel from areas threatened by radioactive contamination. The decision to evacuate areas outside the immediate mishap site will be made by the On-Scene Commander or RSO. If an evacuation is ordered, all personnel will be evacuated to areas upwind of the mishap scene.

(2) Maintain direct control of personnel and vehicular traffic entering and exiting the mishap site. A single control point will be established whenever possible.

l. FFD. The FFD is responsible for controlling fires involving radioactive material. The Base Fire Plan will include all locations where radioactive materials are used or stored. Firefighters will be thoroughly familiar with the hazards involved in fighting fires containing radioactive material.

m. Firefighting, Security, and Medical Personnel. Emergency Response Personnel (ERP) responding to an emergency situation may be required to enter areas where they could be exposed to ionizing radiation sources or devices. ERP will receive initial and periodic training on how to protect themselves from the hazards involved, as per reference (b); however, emergency personnel should understand the relative priority of radiological controls versus other safety considerations. Firefighters, for example, should be trained that when fighting a fire that involves radioactivity, the fire is, in most cases, more of a threat to life and property than radiation exposure and that radiological controls will not be

instituted that significantly impair the firefighting effectiveness. For all radiological spills, incidents, personnel exposure, and mishaps, the affected unit will contact the MCBH Base RSO as soon as feasibly possible at (808) 257-1830.

n. Emergency Action Plans (EAPs) and Procedures

(1) The primary object of EAPs will be the protection of personnel from hazards to life and limb as during a fire, or when high-level radiation sources are present, using the ALARA principle. Requirement for use of primary and secondary dosimetry, as well as engineered controls and equipment, shall be determined by the installation RSO/ARSO and the supporting RHO. The secondary consideration should be the confinement of the contamination to the local area of the incident and treatment of contaminated personnel. 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.

(2) Prior plans will be made in anticipation of radiological emergencies, in order to minimize exposure of personnel and spread of contamination. Such 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. Such applicable procedures that are adopted will be written and distributed to support organizations.

(3) 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.

(4) The following are examples of emergencies, which may be encountered:

(a) Explosion-combat related;

(b) Fires;

(c) Radiological overexposure; and

(d) Injury to personnel in a contaminated area.

(5) As soon as the immediate emergency is under control, a detailed radiological survey will be conducted of the affected area(s). Provided that 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 those areas requiring control of exposure time. Assistance from outside source(s) will be requested as needed.

(6) Fires among or near radioactive commodities have a potential to produce airborne radioactivity. Personnel should avoid the smoke from such fires unless they wear complete anti-contamination clothing and protective respiratory equipment.

(7) Proper selection of a fire resistant storage area for radioactive material will minimize release of radioactivity to the environment in the event of a fire. The following considerations and practices will be observed when selecting storage areas for radioactive materials:

(a) Whenever feasible, radioactive materials will be stored in fire-resistant containers to minimize contamination spread.

(b) Smoking, eating, drinking, chewing tobacco, and the application of cosmetics will not be permitted in radioactive material storage areas.

(c) A current list of locations where radioactive materials are stored will be available to personnel who might be called to fight a fire in such areas. This list should also identify unusual problems.

(d) Semi-annual inspection of radioactive material storage areas will be made to identify fire hazards by personnel trained in fire protection procedures. Deficiencies will be promptly corrected.

(8) For accidents involving radioactive dust, mist, fumes, organic vapors, and gases:

(a) Dial 911, indicate MCBH and give building number, floor, room and location.

(b) Notify all personnel not directly involved to vacate the area immediately. If at all possible, personnel should vacate to an area that is up wind of the accident.

(c) Switch off all fans and central air circulation equipment.

(d) Close all entrances to the accident area and post guards to prevent unauthorized access.

(e) Vacate the area yourself.

(f) Notify the unit RSO/ARSO, RSM, or RPA.

(g) Notify the installation RSO/ARSO at (808) 257-1830 during normal working hours. After working hours, the RSO and ARSO may be reached by calling (808) 216-6256 or (808) 348-4518. Provide a list of any personnel who may have been exposed to radioactive contamination.

(9) Radiation contamination does not preclude emergency medical treatment:

(a) Immediately flush minor wounds thoroughly with running water.

(b) Regardless of how minor the wound, medical personnel must examine the individual.

(c) Personnel with minor wounds should be monitored and decontaminated, if necessary, before leaving the area.

(d) If the wounds are serious, the injured individual must be immediately moved to a medical facility. Personnel accompanying contaminated patients will warn medical personnel that the injured person may be radiologically contaminated. Effectiveness of eliminating radioactive materials from the body depends on promptness of medical treatment. Immediate medical treatment is required for persons:

1. Who may have eaten and/or inhaled radioactive contamination;

2. With wounds that may have been contaminated; or

3. Whose face or extensive areas of their body have been contaminated. (Note: Medical Assistance requires that the injured be evacuated to Tripler Army Medical Center as soon as possible for emergency treatment and radiological decontamination.)

(e) Notify the installation RSO/ARSO of any injuries.

(f) No person involved in a radiation injury will return to work without the approval of the attending physician and the installation RSO/ARSO.

(g) Make sure a report is submitted to the installation RSO within 10 working days. References (a) through (d) contain examples of logs, forms, and records for reporting, as well as those required for normal operations.

(10) FFD, Military Police and Emergency Medical personnel acting as first responders will report to the on-scene commander. The on-scene commander at a radiological mishap site will:

(a) Evacuate all personnel from areas threatened by radioactive contamination. The decision to evacuate areas outside the immediate mishap site will be made by the on-scene commander. If evacuation is ordered, all personnel will be evacuated to areas upwind of the scene.

(b) Control personnel and vehicular traffic entering and exiting the mishap site. A single control point will be established whenever possible.

(c) The FFD is responsible for controlling fires involving radioactive material. The Base Fire Plan will include all locations where radioactive materials are used or stored. Firefighters will be thoroughly familiar with the hazards involved in fighting fires containing radioactive material.

o. Contamination Control. Contamination control shall be implemented, as per reference (b) and the command Radiation SOP. Smoking, eating, drinking, chewing tobacco, and the application

of cosmetics shall be prohibited in posted radioactive contamination areas or in areas where unsealed radioactive sources are used or stored. Food storage in posted radioactive contamination areas shall be prohibited.

(1) Packages or devices with broken sources and any resulting debris should only be handled while wearing rubber or plastic gloves.

(2) Devices with broken sources and any resulting debris should be double wrapped in two plastic bags and sealed with tape. Clearly label the package as containing a device contaminated with radioactive material. Retain all broken or non-illuminating devices (to include those tritium devices licensed by the Army) for disposal as radioactive waste.

(3) Personnel who may have received contamination on bare skin should wash with a mild soap and plenty of tepid water. Naval Medical Command Instruction 6470.10, available at Navy medical commands, offers useful technical guidance for handling radioactively contaminated personnel and monitoring procedures for various radioisotopes.

(4) Contamination within the immediate area or any major end item is possible based on the circumstances of the incident and on radiological measurements. Potentially contaminated areas are not to be open for normal access or potentially contaminated equipment returned to service until resolution by the RSO that radioactive contamination did not occur or reduction of contamination levels are below the allowable limits.

(5) Contaminated items are often stored in one or multiple plastic bags that may break. Liquid, inadvertently left in a container may leak out, and condensation of moisture from the atmosphere, may drip on exposed, contaminated surfaces. Unless all contaminated surfaces of stored materials are appropriately wrapped or contained to prevent the spread of contamination, the entire storage location will be considered potentially contaminated. When all contaminated surfaces are appropriately wrapped, personnel may walk through these areas without anti-contamination clothing. Anti-contamination clothing or equipment may include outer and/or protective devices or garments such as coveralls, gloves, face masks,

face/body shields, boots, shoe coverings, hoods, breathing devices, and other personal protective equipment.

(a) Personnel in potentially contaminated storage areas will wear necessary anti-contamination clothing, particularly if they are to handle contaminated materials.

(b) Reasonable care will be taken in packaging and storing contaminated items to prevent the spread of contamination and to ensure that entry to areas where such storage is permitted does not result in the contamination of personnel or other areas.

p. In-Flight Blade Inspection System (IBIS)

(1) The IBIS is installed on CH-53 series helicopter rotor blades provide in-flight warning of low-blade gas pressure. A sealed source containing 500 micro curies of strontium-90 (Sr-90) remains in a shielded condition when blade pressure is normal. The IBIS extends from its shielded condition to unshielded only when losing blade pressure or by depressing the IBIS manual test button. When in the unshielded position, detectors sense the increased radiation levels and activate a warning light in the flight station.

(2) The dose-rate level when the Sr-90 source is in the shielded position is approximately 0.8 millirem per hour (mR/hr) at 3 inches from the IBIS indicator. When the source is exposed in the unshielded position, the dose rates are approximately 150 mR/hr at 8 inches, 30 mR/hr at 18 inches and 7.5 mR/hr at 3 feet.

(3) When rotor blades are damaged during aircraft maintenance or mishaps, locate and secure any unshielded IBIS to reduce potential radiation exposure to personnel.

(a) Restrict access to an IBIS with known or suspected damage and use radioactive caution barrier tape to establish a perimeter at least 10 feet from source

(b) Use the IBIS protective shipping cover to shield the indicator. Ensure protective shipping cover is fully seated and properly secured with safety cable.

(c) Only personnel with radiation training specific to the IBIS should attempt to put a cover on the indicator.

(d) Appropriate personal protective equipment is required when attempting to shield an IBIS indicator. Wear leather gloves and eye protection (safety glasses, goggles, or face shield), keep eyes at least 24 inches from indicator and do not exceed one minute near indicator.

(4) The IBIS system is NRC licensed. The IBIS technical manual contains user requirements for storing, shipping, installing and testing the IBIS.

q. Decommissioning of MCBH Facilities. Prior to release of facilities previously used for handling, maintenance or storage of radioactive materials or commodities for unrestricted use, the command will contact the MCBH RSO/ARSO. The MCBH RSO/ARSO will work with the respective command and NAVSEADET RASO to develop and implement complete work plans to address any potential residual contamination and to allow for the appropriate level of release of the facility. Commands should provide the RSO/ARSO the following information, 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) Release of the facilities (for example, abandonment or reuse) is not authorized without written approval from the NAVSEADET RASO.

r. Protection of Personnel Handling Radioactive Commodities

(1) Responsibility. Unit commanders, RSOs, RSMs, RPAs, URSMs, supervisors, and individual radiation workers share responsibility for minimizing radiation exposure and controlling radioactive materials. This responsibility includes orientation

and indoctrination of personnel who are subject to occupational exposure to ionizing radiation; promulgation and implementation of applicable directives and standard operating procedures; provision for personnel dosimetry, medical examinations, RADIAC instrumentation, and specialized equipment, when required; and the fostering of a work environment that encourages an emphasis on maintaining occupational radiation exposure ALARA.

(2) Requirements

(a) Control procedures will be developed for the protection of personnel handling radioactive commodities (e.g., shipment, inspection, storage, use, maintenance, and disposal operations).

(b) All activities whose personnel handle radioactive commodities will prepare standard operating procedures. These procedures will be tailored to the operation being performed and the type of commodities handled.

(c) Personnel exposure to ionizing radiation will be maintained ALARA and will conform to the requirements of reference (b).

(d) Written standard operating procedures that specify measures to minimize internal hazards from such operations as handling leaking sources, handling broken radioactive commodities, and responding to incidents or accidents will be prepared.

(e) Smoking, eating, drinking, chewing tobacco, and the application of cosmetics will be prohibited in areas where radioactive materials are stored or handled.

(f) Storage of food, beverages, tobacco products and materials, cosmetics, and eating or drinking utensils will be prohibited in areas where radioactive materials are stored or handled.

(3) Administrative Controls. All activities handling, storing, stocking, or performing maintenance on radioactive commodities will develop administrative controls to:

(a) Ensure safe handling, storage, and shipment of radioactive commodities.

(b) Ensure safe operation of repair and maintenance facilities handling radioactive components, where applicable.

(c) Ensure procedures are prepared for handling credible emergencies during receipt, storage, maintenance, and shipment.

(d) Report defective radioactive commodities to the RSO.

(e) Comply with all applicable directives for the disposal of excess, surplus, and condemned radioactive commodities and/or radioactive waste.

(f) Conduct a physical inventory of applicable radioactive commodities per reference (b).

(g) The supply and the stocking activity, where appropriate, will establish a computer inventory program for radioactive commodities. The program will be able to print out all radioactive commodities in storage by NSN, hazard code and name; and, if available, quantity, radioisotope, activity, location, and status. The RSO/ARSO will be able to obtain this printout upon request and distribute to emergency support elements as required.

(h) All lost, missing, or stolen radioactive material will be reported immediately to the MCBH RSO/ARSO. The MCBH RSO/ARSO will make timely reports to the NAVSEADET RASO and CMC Safety Division.

(i) All radioactive commodities will be marked with a label or sign containing the three-bladed radiation symbol and the words, "Caution-Radioactive Material", along with the isotope and activity, if known. MIL-STD 129 (Military Standard Marking for Shipment and Storage) applies.

s. Storage and Storage Areas

(1) Radioactive materials and commodities will be stored in locked areas with the number of keys and the individuals with access to the keys kept to a minimum.

(2) All storage areas containing radioactive materials and commodities and entrances to such areas, will be labeled with signs containing the three-bladed radiation symbol and the words "Caution-Radioactive Materials". When appropriate, signs, either permanent or temporary, will be securely fixed to barriers, walls, doors, fences, or ropes. Outdoor storage of M1 series tanks, howitzers, and other large equipment items containing radioactive materials is exempted from these labeling requirements.

(3) Areas used for storage of radioactive commodities will be kept to the minimum for adequate control.

(4) Radioactive commodities will not be stored in the same warehouse section with explosives, flammable materials, photosensitive items (e.g., photographic film), food products, or other incompatible commodities.

(5) Radioactive materials will be stored so they are protected from adverse weather or conditions that may deteriorate the packaging materials.

(6) Commodities that contain radioactive gases, tritium-containing devices, or radium will be stored in ventilated structures.

(7) Boundaries of the storage area will be surveyed and checked whenever new packages are received to determine proper warning signs. Radiation levels at the boundary will not exceed 0.5 mR/hr.

(8) "Caution-Radiation Area" and "Caution-High Radiation Area" signs will be placed, when applicable, at each entrance and other locations surrounding such areas.

t. Transportation of Radioactive Material. Regulations governing the transportation of hazardous material are designed to prevent undue exposure 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. Reference (b) provides general transportation requirements. Regulations concerning the

shipment of radioactive materials are provided in references (f) and (g). Utilize references (b), (f), and (g), applicable supply instructions, logistics or supply personnel, or the RSO/ARSO for guidance when preparing to transport radioactive materials.

(1) Prior to performing any transportation operation, each activity will consult the appropriate sections of references (b), (f), and (g). Ensure current editions of references (f) and (g) are available for use.

(2) Each command is responsible for ensuring personnel assigned duties to perform transportation requirements receive instructions regarding the applicable sections of reference (g).

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

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

(5) The unit RSM or RSO/ARSO is responsible for ensuring that all packages offered for transportation or transported by the activity, conform to all applicable requirements of the references, as well as the requirements of the respective NRMP or NRC license.

(6) The Supply Officer, RSO/ARSO, and RSM for each activity are responsible for ensuring that all radioactive material has been properly packaged and certified, and that the material is expeditiously transported to the receiving organization.

(7) A record of transfer of radioactive material will be maintained for a minimum of three years from the date the material is accepted by the carrier.

(8) Shipment of all radiological items will be per references (b), (f), and (g).

u. Training. The RSO/ARSO/RSM shall develop, coordinate, document, approve and participate in training personnel as required by reference (b).

(1) Radiation safety training shall ensure that personnel are aware of radiation safety fundamentals and requirements, procedures to maintain radiation exposure ALARA, and procedures to reduce potential for exposure to radioactive contamination, if applicable.

(2) Commands shall ensure the depth of the material and frequency of periodic training is commensurate with the level of responsibility and potential hazards. Reference (b) allows annual refresher training to be interspersed in smaller portions throughout a 12-month period. It is not necessary to conduct all refresher training on the same date.

(3) Within the first six months of assuming command, the Commander, CO, or OIC shall successfully complete the RASP Leadership Course (S-NKO-0001), available on the NAVSEADET RASO Navy Knowledge Online website. Other key leadership personnel, as defined by the command, are encouraged to complete the course.

(4) Annually, the Commander, CO, or OIC shall retake the RASP Leadership Course (S-NKO-0001) or alternative training specified by the NAVSEADET RASO. Other key leadership personnel, as defined by the command, may also complete the course. Management/leadership training records shall be maintained per reference (b).

(5) Non-radiation workers may require access to posted radiation areas to perform specific functions and receive ionizing radiation exposure incidental to performing normal work tasks even without handling radioactive material or using radiation producing machines. Non-radiation workers shall receive initial training before beginning work around RASP radiation sources. Emergency personnel, firefighters, medical and security personnel are considered non-radiation workers. Reference (b) mandates that emergency personnel, including firefighters and medical responders, receive training on emergency exposure limits and the importance of medical treatment over contamination concerns. Non-radiation workers shall receive initial training before beginning work around RASP radiation sources. Each non-radiation worker shall receive annual refresher training as specified by reference (b). This training shall be documented and maintained per reference (b).

(6) Individuals who prepare Class 7 (Radioactive) Material for transportation by any mode, military or commercial, shall be trained, per reference (b), prior to assignment to such duties. Persons who successfully complete the NAVSEADET RASO Radioactive Transportation Course (S-553-1111) receive the required training to certify shipping papers for Class 7 materials only. Individuals who attend the NAVSEADET RASO Radiation Safety Course (S-4J-0016) and pass the transportation examination also receive the required training to certify shipping papers for Class 7 materials. Individuals who prepare Class 7 Material for transportation by any mode, military or commercial, shall re-qualify, per reference (b). Radioactive material shipping training records shall be documented and maintained per reference (b).

(7) While other organizational personnel and members of the public are not involved in the RASP, concerns about the presence of radiation warning signs may develop. To minimize possible concerns, the command shall brief these personnel before they begin work adjacent to posted RASP controlled areas. Per reference (b), the briefing shall be commensurate with the size and complexity of the command's RASP and the conducted training shall be documented and maintained.

v. Utilization Logs. Reference (b) mandates that utilization logs shall be used and maintained for the following:

(1) Use of all unsealed radioactive material and sources.

(2) Use of sealed radioactive sources, with activities greater than 10 times the quantities listed in reference (e), Appendix C, unless otherwise authorized by a NRMP.

(3) Radioactive instrument check sources.

(4) Use of all registered radiation producing machines and devices.

(5) The information required on a utilization log and retention requirements are specified in reference (b).

w. Leak Test Frequency. Per reference (b), sealed sources shall be leak tested.

x. Radiological Area Posting Requirements. Per reference (b), all radiological areas shall be posted. Only RASP radiation workers and non-radiation workers shall be authorized entry into RASP posted radiation areas.

5. Administration and Logistics

a. Point of Contact. The point of contact regarding this Order is Base Safety, MCBH at (808) 257-1830.

b. This Order can be accessed online via the Marine Corps Base Hawaii SharePoint site at https://eis.usmc.mil/sites/mcbhmpa/Adjutant/Base%20Directives%20and%20Policies/Forms/MCBH%20Forms.aspx.

c. Records Management. Records created as a result of this Order shall be managed according to National Archives and Records Administration approved dispositions per SECNAV M-5210.1 and SECNAV Notice 5210 to ensure proper maintenance, use, and accessibility and preservation, regardless of format or medium.

6. Command and Signal

a. Command. This Order is applicable to MCBH, tenant commands, and base personnel.

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

J. W. BEAVEN

DISTRIBUTION: A