Item 10. Radiation Protection Program

A. General. The LRSO is responsible for monitoring the overall radiation protection program, and is fully responsible for inventory, inventory reconciliation, and leak testing. Installation and Command RSOs and designated RPAs are resonsible for implementing the radiation protection program in accordance with license conditions, Marine Corps orders, Navy regulations, and federal regulations. The basic radiation protection program for the Marine Corps is provided below

B. Radioactive Commodity Inspection Program.

1. The Marine Corps Radioactive Commodity Inspection Program ensures that appropriate management oversight is provided to command elements considered to be users of CAMs/ACADAs in the Marine Corps.

2. In order to effectively evaluate the adequacy of the oversight provided, the inspection program utilizes a system comprised of both external and internal audits.

a. The LRSO is responsible for conducting external inspections of each command element bearing responsibility for compliance with this NRMP.

b. LRSO and each MEF/MSC CRSO shall perform internal audits to verify compliance within their own command elements. For example, the LRSO shall conduct inspections of the Radiological Controls Office (RCO), the MEF CRSOs shall conduct inspections of the MSCs (Divisions, Wings, and Groups), and the MSC CRSOs shall inspect individual units that possess CAMs, ACADAs, etc.

3. External inspections will be conducted for responsible command elements at the frequencies indicated below:

Command Element	Inspection Frequency	Inspecting Command
MEF	Annual	MARCORLOGBASES/ LRSO or ALRSO
MSC (Division, Wing, Group)	Annual	MARCORLOGBASES/ LRSO or ALRSO
Units	Annual *	MARCORLOGBASES/ LRSO or ALRSO

* Accomplished on a rotating basis. The selection of units to be inspected will be performance based, as determined by discrepencies identified during internal MSC/MEF inspections from the previous calendar year. Additional units will be selected such that approximately 20% of the units possessing CAMs and/or ACADAs within a particular MEF will be evaluated each calendar year.

4. Internal inspections will be conducted by responsible command elements at the frequencies indicated below:

Command Element	Inspection Frequency	Inspecting Command
LRSO/RCO	Semi-Annual	LRSO/ALRSO
MSC (Division, Wing, Group)	Semi-Annual	MEF CRSO
Units	Semi-Annual	MSC CRSO

5. Inspections conducted by the LRSO and ALRSO shall be accomplished in accordance with the guidelines of the U.S. Marine Corps Logistics Bases Radiological Controls Inspection Manual, provided in enclosure (4).

a. The LRSO/ALRSO shall utilize the Logistics Radiation Safety Officer Internal Audit Checklist, provided in the U.S. Marine Corps Logistics Bases Radiological Controls Inspection Manual, for conducting internal inspections.

b. CRSOs shall utilize the Program Review Checklist, provided in the U.S. Marine Corps Logistics Bases Radiological Controls Inspection Manual, for conducting internal inspections.

C. Leak Testing and Tracking Program.

1. CAMs.

a. CAM leak testing and tracking is performed once during March of each year. Leak tests are required every 12 months and before and after maintenance.

b. CRSOs and RPAs of Major Subordinate Commands (MSCs) and units in possession of CAMs, are responsible for ensuring leak tests are performed. Leak test samples are submitted to the Marine Corps RCO for analysis. The following command elements/units shall submit leak test samples for each CAM in their individual inventories in accordance with the guidance provided in paragraph 10.c(3) below:

1ST MarDiv	2ND MarDiv	3RD MarDiv	MARFORRES	1ST Radio BN
3RD MAW	2ND MAW	1ST MAW	CBIRF	2ND Radio BN
1ST FSSG	2ND FSSG	3RD FSSG	NBC School *	

* The CRSO/RPA assigned as the custodian for Marine Corps CAMs at the NBC School, Ft. Leonard Wood, is authorized to utilize on-site radiochemistry laboratory facilities for analysis of samples taken on NBC School CAMs only. The sampling and analysis shall be performed during March of each calendar year, and the results shall be submitted as an attachment to the semi-annual physical inventory also required to be submitted at this time.

c. CAM Leak Test Procedure:

(1) The following procedure and the materials needed to perform leak testing (wipe test materials) can be found in enclosure (5). Appropriate quantities of each of these items should be procured by cognizant commands to ensure enough materials are on hand to perform the required sampling for all using units. (The CAM leak test procedure and the accompanying materials can also be found on the USMC Radcon website, http://www.ala.usmc.mil/radcon/)

(2) CAMs shall be leak tested concurrently with the first semi-annual inventory conducted in March of each calendar year.

(a) CAM and drift tube serial numbers are found on label plates on the sides of Marine Corps CAMs. The CAM serial number (MAR-M-XXXXX) and drift tube serial number (MAR-C-XXXX) shall be recorded on the pre-stamped filter envelope.

(b) The following additional information shall also be recorded on the leak test envelope:

User name, RUC, location, phone number, and fax number
Name and RUC of tester
Date the wipe test was performed

(c) Disposable gloves shall be worn to perform leak test sampling.

(d) Exterior CAM surfaces around the entire nozzle protective cap assembly shall be wiped.

(e) Leak test filter disks shall be placed in an interlocking seal plastic bag and sealed before placing the wipe in the leak test envelope.

(f) The interlocking seal plastic bag shall be placed into the leak test envelope and this envelope shall be sealed with tape.

WARNING

DO NOT LICK ENVELOPE TO SEAL AS INGESTION OF NICKEL-63 MAY RESULT. USE TAPE ONLY.

(g) The pre-stamped leak test envelope shall be marked: MAIL ROOM - DO NOT OPEN.

(h) Place sealed, marked envelope in a second envelope, seal with tape, and forward to the cognizant MSC CRSO.

The MSC CRSO shall collect all CAM wipe samples from units under their cognizance and mail to:

RADIOLOGICAL CONTROLS OFFICE (RADCON)
ATTN: RADIOCHEMISTRY LAB
814 RADFORD BLVD STE 20348
ALBANY GA 31704-0348

MAILROOM - DO NOT OPEN

(k) Wash hands thoroughly with soap and water.

(l) Continued use of the CAM is permitted, however, use should be minimized if possible until leak test results are received.

(1) Sample analysis. Leak test sample analysis shall be conducted by the RCO radiochemistry laboratory at MCLB Albany or other sites as designated by the LRSO. Analysis shall be performed in accordance with enclosure (6).

(a) Leak test results will be reported to the owning unit and COMMARCORLOGBASES, Albany, GA (Codes 577-3 and L10).

(b) If leak test analysis indicates the presence of 0.005 μCi or greater of Ni-63, the laboratory shall immediately notify the LRSO, the inventory manager, the cognizant IRSO/CRSO, and the owning activity by priority electronic or naval message. The IRSO/CRSO ensures the owning unit immediately isolates and contains the CAM, and that the CAM is shipped to MCLB Albany per LRSO and Inventory Manager instructions.

(2) The LRSO shall identify units who are delinquent in submitting their leak test samples and report those units to their cognizant MEF or MARFOR headquarters for resolution.

(a) Notification of delinquencies will be made by naval message.

(b) The MEF or MARFOR headquarters will research and resolve the reported delinquency.

(c) Within 15 days after notification of the delinquency, the cognizant MEF or MARFOR headquarters will provide to the LRSO a detailed account of the root cause for the delinquency, immediate corrective actions, and actions taken to prevent recurrence.

(6) Records.

(a) The owning unit shall maintain leak test results, the date of test, and the names of the individuals conducting the sampling as a permanent part of the CAM record jacket.
(b) The LRSO shall maintain records of leak test performance and results as part of CAM Inventory/Leak Test files for a minimum of three years.

(c) Radiochemistry laboratories shall retain LSC data sheets for a minimum of three years.

2. ACADAs.

a. IAW the provisions of Sealed Source and Device Registration NR-1129D-101-S, annual leak testing of the CAD Model GID-3 (ACADA) is not required as part of a routine leak testing and tracking program.

b. Leak test shall, however, continue to be conducted at the following specific intervals:

(1) After internal maintencance or repair evolutions tha tinvolve the sisassembley of the source modjule, for example:

(a) Source removal with reinstallation of the same source

(b) Source removal, with installation of a new source

(c) Module membrane inspction or replacement.

(2) Leak tests performed to satisfy the requirements of this sectionshall be accomplished prior to sealing the source module and returning the ACADA to a servicealble status.

c. ACADA Leak Test Procedure:

(1) Marine Corps personnel authorized to perform ACADA maintenance shall utilize the following procedure whenever leak tsts are required IAW Sealed Source and Device Registration NR-1129-D-101-S an this NRMP. The procedure and the materials needed to perform leak testing (wipe test materials) are provided in enclosure (5). Appropriate amounts of each of theses items should be procured by cognizant commands to ensure enoug materials are on hand to perform sampling when required (The ACADA leadk test procedure and the accompanying list of materials can also be fond on the USMC Radcon website, hppt://www.ala.usmc.mil/radcon/)

(2) ACADA and detector cell serial numbers are found on label plates on the sides of Marine Corps ACADAs. The ACADA serrial number and detecto cell serial number shall be crecorded on the pre-stamped fileter envelope.

(3) The following additional information shall aslo be recorded on the leka tset envelope:

Name, location, phone number, fax number, and RUC of user
Name and RUC of tester
Date the wipe test was performed

(4) Disposable gloves shall be worn to perform leak test sampling.

(5) Areas representative of the point amost directly accessible to the Ni-63 sources sahll be wiped.

(6) Leak test filter disks shall be placed in an interlocking seal plastic bag and sealed, before placing the wipes in the leak test envelope. Each disk shall be placed in indivdual plastic bags and labeled with the wope number and the spedific locations where the wipe was taken.

(7) The interlocking seal plastic bag shall be placed in to the leak test envelope and this envelope shall be seled with tape.

WARNING

DO NOT LICK ENVELOPE TO SEAL AS INGESTION OF NICKEL-63 MAY RESULT. USE TAPE ONLY.

(8) The pre-stamped leak test envelope shall be marked: MAIL ROOM - DO NOT OPEN.

(9) Place sealed, marked envelope in a second envelope, seal with tape, address and mail to:.

RADIOLOGICAL CONTROLS OFFICE (RADCON)
ATTN: RADIOCHEMISTRY LAB
814 RADFORD BLVD STE 20348
ALBANY GA 31704-0348

MAILROOM - DO NOT OPEN

(10) Wash hands thoroughly with soap and water.

(11) Use of the ACADA is permitted, however, use should be minimized if possible until leak test results are received.

d. Sample analysis. Leak test sample analysis shall be conducted by the RCO radiochemistry laboratory at MCLB Albany or other sites as designated by the LRSO. Analysis shall be performed in accordance with enclosure (6).

(1) Leak test results will be reported to the owning unit and COMMARCORLOGBASES, Albany, GA (Codes 577-3 and L10).

(2) If leak test analysis indicates the presence of 5 nanocuries (nCi) or greater of Ni-63, the laboratory shall immediately notify the LRSO, the inventory manager, the cognizant IRSO/CRSO, and the owning activity by priority electronic or naval message. The IRSO/CRSO ensures the owning unit immediately isolates and contains the CAM, and that the CAM is shipped to MCLB Albany per LRSO and Inventory Manager instructions.

e. Records.

(1) The LRSO shall maintain records of leak test performance and results as part of CAM Inventory/Leak Test files for a minimum of three years.

(2) Radiochemistry laboratories shall retain LSC data sheets for a minimum of three years.

D. Accountability.

1. Physical inventories are conducted on a semi-annual basis.

2. Reconciled inventories shall be submitted to the LRSO not later than 31 March and 30 September of each calendar year.

3. Each MSC/unit identified below is responsible for conducting, reconciling, and submitting the required semi-annual CAM inventories:

1ST MarDiv	2ND MarDiv	3RD MarDiv	MARFORRES	1ST Radio BN
3RD MAW	2ND MAW	1ST MAW	CBIRF	2ND Radio BN
1ST FSSG	2ND FSSG	3RD FSSG	NBC School *	

4. The LRSO shall identify inventory discrepencies and units who are delinquent in submitting their reconciled inventories, and report the discrepency or delinquency to the cognizant MEF or MARFOR headquarters for resolution.

a. Notification of inventory discrepencies and delinquencies will be made by naval message.

b. The MEF or MARFOR headquarters will research and resolve the reported inventory discrepency or delinquency.

c. Within 15 days after notification of the inventory discrepency or delinquency, the cognizant MEF or MARFOR headquarters will provide to the LRSO a detailed account of the root cause for the discrepency or delinquency, immediate corrective actions, and actions taken to prevent recurrence.

5. CAMs that undergo maintenance requiring the replacement of the drift tube module must have the new and old drift tube serial numbers accounted for as follows:

a. Drift tube modules purchased by the Marine Corps for use as replacement components shall be accounted for individually prior to installation, and in conjunction with the serial number of the CAM in which it's installed after it's placed into service.

b. Replaced drift tubes shall continue to be inventoried and tracked by serial number until such time as they are properly disposed of via the LLRW disposal program.

c. The label plates affixed to the CAM receiving a new drift tube shall be changed to reflect the serial number of the new drift tube **prior** to returning the CAM to service.

6. CAMs and drift tubes being held for disposal at USMC LLRW storage facilities contribute towards the total Marine Corps Ni-63 inventory and must be accounted for and reported during during semi-annual inventories. CAM/drift tube inventory reductions resulting from LLRW shipment to authorized disposal sites shall be reported to the LRSO at the time of disposal and reconciled as an inventory loss during the next required physical inventory.

7. CAMs that are not accounted for in two successive inventory cycles shall be considered lost and an OPREP-3 NAVYBLUE REPORT shall be initiated per paragraph 10.g(2) of this NRMP.

8. Records of each Marine Corps CAM inventory shall be maintained by the LRSO for a minimum of three years.

E. Surveys.

1. Cognizant IRSOs/CRSOs or their designated RPAs shall ensure wipe test surveys are conducted for removable Ni-63 contamination at the following frequencies:

a. Daily – Depot level and other authorized maintenance areas after internal CAM maintenance is performed.

b. Annual – CAM leak tests.

c. Transportation – as required.

(1) Shipping surveys shall be performed prior to CAM shipment as follows:

(a) A wipe test on the CAM or the external surfaces of the shipping container in accordance with 49 CFR 173.443;

OR

(b) A valid leak test must have been performed within the previous 12 month period, with documentation indicating the results of that leak test included with the shipping papers, and

(c) New packaging materials shall be used for each shipment. This includes the use of new exterior shipping containers and packing materials.

(2) Records of RAM shipments shall be maintained in local program files for a minimum of three years (Ref. - 10 CFR Part 71.91).

(3) Receipt surveys. Shipping containers and packages containing RAM shall be inspected as soon as practicable after receipt (Ref. - 10 CFR Part 20.1906(c)):

(a) During normal working hours: Within 3 hours.

(b) After normal working hours: Within 3 hours after the start of the next working day.

(c) If a shipping container or package containing RAM is damaged, the required user emergency actions found in paragraph F (1) below shall be followed.

(d) Records of RAM receipt shall be maintained in local program files as long as the material is possessed and for a minimum of three years following transfer or disposal of the material (Ref. – 10 CFR 30.51).

d. Surveys shall be performed as directed by the LRSO for incident/accident investigations involving licensed radioactive material.

F. Emergency Procedures.

1. Required user actions for damaged or leaking CAMs. Users shall:

a. Secure the cam and restrict area access.

b. Notify the responsible IRSO/CRSO immediately upon verifying the CAM and the immediate affected area is secure.

c. Damaged CAMs should only be handled while wearing disposable rubber or plastic gloves. Wear appropriate PPE as directed by the IRSO/CRSO.

d. With IRSO/CRSO supervision, place the device in double plastic bags, seal with tape, and label:

"**DAMAGED NICKEL-63 DEVICE – DO NOT OPEN**".

e. Store the CAM in a secure area until disposition authorization is obtained from the Inventory Manager (Code 577-3) to either turn the CAM into MCLB Albany for repair or to dispose of it as radioactive waste.

USERS ARE NOT AUTHORIZED TO PERFORM MAINTENANCE ON THE CAM. USERS SHALL NOT SHIP OR TRANSFER CONTAMINATED CAMS WITHOUT PRIOR AUTHORIZATION FROM THE LRSO AND DISPOSITION INSTRUCTIONS FROM THE APPROPRIATE INVENTORY MANAGER.

f. Dispose of PPE as radioactive waste per IRSO/CRSO instructions.

g. Personnel who may have come into contact with radioctive contamination should wash affected areas with a mild soap and water.

2. Debris from fires or physical destruction of CAMs shall be surveyed to retrieve the source(s) and to control the spread of contamination.

3. Potentially contaminated areas and equipment shall not be released until authorized by the LRSO

4. Laboratory analysis of wipes by liquid scintillation counting is the only approved method for determining contamination levels and authorizing the final release of areas or equipment.

G. Incident/Accident Reporting.

1. The IRSO/CRSO shall report all damage, loss, or theft of CAMs to the LRSO immediately upon verifying the damage, loss, or theft has occurred. All notifications shall include a report to the installation or command higher headquarters. A user incident notification form, RSO incident notification form, and an incident notification tree are provided at enclosure (7) to assist Marine Corps personnel in collecting important data and reporting that data to appropriate comand elements.

2. OPREP-3 NAVY BLUE Reports.

a. **Per NAVSEADET RASO instructions, MARCORLOGBASES, Radiological Controls Office shall make all required voice and follow up hard copy message OPREP-3 NAVYBLUE Reports for incidents/accidents involving licensed radioactive material.**

b. P-3 NAVYBLUE Reports are made in accordance with OPNAVINST 3100.6 for the incidents listed below. COMNAVSEASYSCOM (SEA-04N), NAVSEADET RASO, and CMC (SD) shall be information addressees to all OPREP-3 NAVYBLUE Reports. Guidance for submission of OPREP-3 NAVYBLUE Reports, including a sample report, is provided at enclosure (8).

c. following incidents require the initiation of OPREP-3 NAVYBLUE Reports:

(1) Radiation incidents as defined in 10 CFR 20.2202.

(2) Theft or loss of Ni-63 sources or CAMs per 10CFR20.2201.

(3) CAM leak test results indicating a total removable activity of 0.005 μCi (microcuries) or greater.

(4) Radiation incidents as defined in 10 CFR 30.50.

(5) Any substantial safety hazard.

d. Written Notification/report of Exposures, Radiation Levels and Concentrations of Radioactive Material Exceeding Limits and Follow-up Reports. A written report shall be made within 15 days to CNO (N45) with copies to NAVSEASYSCOM (04N) and NAVSEADET RASO for the conditions listed below.

(1) Radiation incidents reported by OPREP-3 NAVY BLUE REPORT per paragraph G2 above.

(2) Reports of exposures, radiation levels and concentrations of Ni-63 exceeding limits as defined in 10 CFR 20.2203, include doses exceeding the following:

(a) Occupational dose of an individual exceeding limits specified in NAVMED P-5055, Chapter 4.

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

(c) Limits for an individual member of the public.

(d) Theft or loss of Ni-63 sources shall be reported as an OPREP-3 NAVY BLUE REPORT per paragraph 10.g(2) above.

(e) Follow up reports shall be submitted as required by as required by 10 CFR 30.50

(3) Notification/written Report of Significant Abnormal Occurrence. In the event of a significant abnormal occurrence not covered by the notification requirements above (such as temporary loss of custody), the command shall take appropriate measures to return the situation to normal. The command shall:

(a) Notify the LRSO immediately.

(i) The LRSO will notify NAVSEADET RASO.

(b) Review and document the occurrence.

(c) Documentation of the occurrence shall include:

(i) A narrative summary that identifies the cause of the occurrence.

(ii) Immediate actions taken to return the situation to normal

(iii) Actions taken to prevent recurrence.

(d) A copy of the report shall be forwarded to NAVSEADET RASO via the LRSO within 25 days after the occurrence of the incident.

(e) Notification Information:

Chief of Naval Operations (N45)
Washington, DC 20350 - 2000
Telephone Number: (DSN) 332 - 2582/2570
Commercial Number: (703) 602 - 2582/2570
Message Address: CNO WASHINGTON DC//N45//

Commander
Naval Sea Systems Command (SEA 04N)
1333 Isaac Hull Ave. S.E.
Washington, DC 20376
Telephone Number: (DSN) 326 - 2414
Commercial Number: (202) 781 - 2414/5569
Fax Number: (202) 781 - 4606
Message Address: COMNAVSEASYSCOM WASHINGTON DC//SEA 04N//

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//00//

Commandant of the Marine Corps (SD)
2 Navy Annex

Washington, DC 20380-1775
Telephone Number: (DSN) 224 - 1202/1077
Commercial Number: (703) 695 - 1202/1077
Fax Number: (703) 695 - 3231
Message Address: CMC WASHINGTON DC//SD//

Commander
Logistics Operations Center, L10
Attn Radiological Controls Office814 Radford Blvd, Ste 20330
Albany, GA 31704-0330
Telephone Number: (DSN) 567 - 5511
Commercial Number: (229) 639 - 5511
Fax Number: (229) 639 - 5516
Message Address: COMMARCORLOGBASES//L10//

H. Shipping /Transfer/Receipt.

1. Shipping/Transfer.

a. Marine Corps shipments and transfers of RAM, including transport in government vehicles, shall be accompanied by a RAM Movement Form or equivalent that provides specific identifying information for the RAM and emergency contact information in the event of an accident involving the equipment items being shipped. Enclosure (9) provides appropriate transportation documents.

(1) USMC RAM Movement Form – Required when RAM is offered for shipment in commerce by commercial carrier. The RAM Movement Form or an equivalent document containing the same relative information shall be completed and included as part of the shipping papers.

(2) DD Form 836 – Required when RAM is transported outside of USMC installations via government vehicle. The form shall be completed and be in the possession of the vehicle driver at all times during transport, except in the event of national emergencies.

Note: These transportation documents can also be found on the USMC Radcon website, http://www.ala.usmc.mil/radcon/)

b. MARCORLOGBASES Inventory Manager's (IM) who are responsible for equipment containing RAM shall notify the RCO of all WIR Disposition Instructions (WIR) and Material Release Orders (MROs) that authorize transactions involving the movement of those Marine Corps assets.

c. IM's utilize a standardized MRO format that ensures the intended CAM recipient meets the following minimum criteria:

(1) Receiving units have an approved allowance and are designated as an authorized recipient.

(2) Requirements are met for proper RAM receipt, use, and storage by verifying receiving units have personnel trained to use and store the equipment and a suitable area in which the RAM will be stored and secured against unauthorized access.

(3) Pre-shipment and pre-transfer inspections and/or surveys are performed and documented.

d. IM's shall notify the LRSO/RSO when issuing a MRO or WIR disposition instruction to supply activities, end-users, or maintenance facilities for the issue, fielding, transfer, or shipment of equipment containing RAM by:

(1) Providing the RCO with copies of each MRO and WIR issued concurrently with its issuance to DDAG or the FMF.

(2) Ensure MRO's and WIR's direct designated receiving units to provide written notification to the LRSO within 5 working days after receipt of RAM.

e. Responsible IM's shall investigate non-reported receipt of ordered transactions after:

(1) 10 working days following the reported shipping date for CONUS shipments.

(2) 45 days following the reported shipping date for OCONUS shipments.

2. Receipt. Upon successful completion of each shipment or transfer of assets containing RAM, the designated receiving command shall provide written verification to the RCO, with a copy furnished to the IM, that:

a. The RAM shipment reached its intended final destination.

b. Required receipt inspections were performed and documented.

Note: Submission of this verification by electronic means is acceptable for meeting this reporting requirement.

3. Records.

a. Records of RAM receipt shall be retained for as long as the material is possessed and for 3 years following transfer or disposal of the material (Ref. – 10 CFR 30.51).

b. IM's shall maintain records of MRO's and WIR disposition instructions issued for a minimum of 3 years following the ordered transfer or disposal of the RAM.

c. The LRSO shall maintain copies of MRO and WIR disposition instructions for a minimum of three years as part of the CAM inventory record.

I. Records. Radiation Safety Program records will be maintained by the LRSO for a minimum of three years in accordance with 10 CFR 30.51 and RAD-010, unless otherwise stipulated by this NRMP. Survey records and incident reports will be maintained until permit termination.