



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
UNITED STATES ARMY TANK - AUTOMOTIVE AND ARMAMENTS COMMAND
ARMAMENT AND CHEMICAL ACQUISITION AND LOGISTICS ACTIVITY
ROCK ISLAND, ILLINOIS 61299-7630

September 9, 1997

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Office of the Director, Armament and
Chemical Acquisition and Logistics Activity

Mr. A. Bill Beach
United States Nuclear Regulatory Commission
Region III
Nuclear Materials Licensing Section
801 Warrenville Road
Lisle, Illinois 60532-4351

PRIORITY ROUTING	
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Dear Mr. Beach:

In compliance with the Confirmatory Modifying Order, March 26, 1997, we are providing a corrective action plan to address identified deficiencies. The enclosed action plan covers actions that the U.S. Army Tank-automotive and Armaments Command, Armament and Chemical Acquisition and Logistics Activity (TACOM-ACALA), together with Headquarters Department of the Army, and U.S. Army Materiel Command, will take to correct these radiation safety program deficits. Through this combined effort, the Army will resolve the issues with which your commission has had concern.

Both TACOM-ACALA and the Army are committed to ensuring that the Army's radiation protection program succeeds in keeping our personnel and the environment safe, and to meeting the requirements of the Nuclear Regulatory Commission.

My point of contact for this corrective action plan is Mr. Vernon E. Vondera, (309) 782-1690.

Sincerely,

[Signature]

Jimmy C. Morgan
Director, Armament and Chemical
Acquisition and Logistics Activity

Enclosure

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**U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND
ARMAMENT AND CHEMICAL ACQUISITION AND LOGISTICS ACTIVITY**

RADIATION PROTECTION PROGRAM CORRECTIVE ACTION PLAN

Introduction:

This corrective action plan is being submitted in accordance with the 26 March 1997 Confirmatory Order Modifying License. The purpose of this plan is to lay out actions and milestones to correct deficiencies in the U.S. Army Tank-Automotive and Armament Command (TACOM), Armament and Chemical, Acquisition and Logistics Activity (ACALA) radiation protection program (RPP). An analysis of the TACOM-ACALA licenses and safety office functions revealed many of the changes needed to successfully manage the RPP reside at levels of Army management higher than TACOM-ACALA. As a result, this plan will also discuss actions necessary to change the RPP throughout the Army.

Outline:

This plan discusses items identified for change. The plan includes actions to be taken, and milestones for completing and implementing any changes. Following is a list of the major areas to be discussed:

- 1) Restructure the Army Radiation Protection Program
- 2) Inventory Tracking
- 3) Inspections/Audits
- 4) Radiological Commodity Training
- 5) Incident Reporting and Control
- 6) Tritium Reduction/Elimination
- 7) Other Management Actions

Completion of Actions:

By July 1998 all actions, except those dealing the fielding of new equipment to replace the radioactive light sources, should have been completed or updated. Therefore, by 1 Aug 1998 a report will be submitted on the completion of these corrective actions per part IV paragraph F of the Confirmatory Order. In this report a progress update will be provided on those items listed as ongoing.

1. RESTRUCTURE THE ARMY RADIATION PROTECTION PROGRAM

Background: The Army's Radiation Safety Program requires restructuring to improve its effectiveness.

Action: Restructure the Army's Radiation protection program as follows

Headquarters Department of the Army will:

- Charter Radiation Safety Council with membership from HQDA, and MACOMs,
- Publish a new Army Regulation 11-XX that outlines the Army's policies and identifies responsibilities.

Headquarters AMC will:

- Pursue the establishment of a commodity radiation safety committee to work to standardize program implementation across AMC,
- Negotiate memoranda of understanding (MOU's) with the other MACOMs outlining their responsibility as users of licensed radioactive commodities.

Milestones:

Headquarters Department of the Army

- Charter Army Radiation Safety Council - 31 Oct 97
- Implement AR 11-XX as interim guidance - Second Quarter FY 98

Headquarters AMC

- Establish AMC commodity radiation safety committee - Second Quarter FY 98
- AMC negotiate MOUs with user MACOMs - First through Third Quarters FY 98

Action:

Headquarters Department of the Army, and Headquarters Army Materiel Command will negotiate an agreement on future changes to NRC licenses for Army Commodities to improve the Army's Radiation Protection Program.

2. INVENTORY TRACKING

a. Inventory Tracking at licensee level:

Background: The requirement to conduct an annual inventory can be met using a combination of available data sources rather than having the license managers personally count the stock.. These data sources include mandatory yearly inventories at the unit level, the Requisition Validation (REQVAL) database for tracking end items at the retail level, the Commodity Command Standard System (CCSS) database for tracking end items at the wholesale level, as well as other logistics data bases. The available data bases will show the license holder an approximate number of items in each location. The unit inventories will be relied upon to ensure a precise count has been completed.

Action: Improve Inventory Tracking Visibility

TACOM-ACALA will:

- Query the available databases at least annually to determine locations of items and approximate numbers in those locations.
- Conduct spot checks of unit inventory records to verify the units are conducting annual inventories on all components.
- Place emphasis on user's need to report inventory discrepancies by sending reminder notices to the field in an AMC signed memorandum and other various publications.

Headquarters AMC will:

- Examine the Army's accountability and visibility systems to facilitate inventory requirements to identify opportunities for improvement.

Milestones:

TACOM-ACALA:

- Query existing inventory systems - 31 Mar 98
- Send reminder to users to report inventory discrepancies - Second Quarter 98/ on going
- Spot Check Unit Inventories - Concurrent with inspections.

Headquarters AMC:

- Query MACOM logistics centers at least annually to ascertain accountability and visibility problems and assist in problem resolution where possible - Second Quarter FY 98/Ongoing.

b. Inventory Tracking at Camp, Post or Stations:

Background: Annual inventories of radioactive commodities are required at each Camp, Post and Station down to the unit level. Inventory records from the unit level are to be maintained for inspection and reported to Installation RPO. Inventory reports are essential for maintaining accurate accountability at the licensee level.

Action: Draft a letter to all MACOM Commanders, reemphasizing the importance of performing and reporting of inventory accountability.

Milestone:

- Initial Memorandum discussing inventory requirements was sent by AMC - 26 Mar 97.

TACOM-ACALA:

- Draft a letter for signature at Headquarters AMC emphasizing the importance of inventories and accountability - Second Quarter FY 98.
- Publish articles in various Army sources discussing the importance of conducting inventories and reporting discrepancies immediately - On Going.

Headquarters AMC:

- Transmit letter to all MACOM Commanders - Second Quarter FY 98
- Submit inventory tracking as an agenda item for initial Army Radiation Safety Council Meeting - Second Quarter FY 98.

3. INSPECTIONS/AUDITS

a. Consolidated Inspection Schedule:

Background: Currently each Army licensee is responsible for their own inspection schedule. This results in some locations being inspected many times while others may be missed. This has also lead to a lack of commonality, and confusion among the users and licensees.

Action: Headquarters AMC will develop a consolidated inspection criterion and schedule to maximize the number of inspections conducted annually, and to assure consistency.

Milestones:

Headquarters AMC will:

- Develop a consolidated checklist - COMPLETED
- Provide guidance to consolidate inspections - COMPLETED
- Lay out a consolidated schedule for FY 98 - 31 Oct 97
- Submit inspections as an item for the initial Army Radiation Safety Council Meeting - Second Quarter FY 98
- Cross train inspection teams - Ongoing process
- Provide periodic inspection summary report of findings and recommendations to Headquarters Department of the Army - Ongoing

b. Transfer of Bulk Storage Location Inspections to Appropriate Licensee

Background: Currently TACOM-ACALA is responsible for inspections at Anniston Army Depot, Letterkenny Army Depot, Rock Island Arsenal, MCLB-Barstow, MCLB-Albany, Red River Army Depot, Sharpe Depot, and New Cumberland Depot. As a result of the Defense Logistics Agency (DLA) acquiring their own license, bulk storage DLA facilities can be removed from TACOM-ACALA licenses.

Action: Submit license amendments removing all depot facilities with bulk storage, except Rock Island Arsenal. Maintenance activities at Anniston Army Depot, Letterkenny Army Depot, MCLB-Barstow, and MCLB-Albany will not be affected by this change (see paragraph 3c. Below with respect to MCLBs changes).

Milestone: Submit amendment - Amendments submitted on 9 Jul 97, and 18 Jul 97 - Action will be complete when amendments are approved.

c. Transfer Items used by the USMC to Navy license

Background: The USMC holds commodities under the TACOM-ACALA license. This created some cross service difficulties in management. USMC should pursue licensing the commodities they hold.

Action: USMC will either acquire a new license, or transfer commodities under an existing Navy license followed by an amendment to the TACOM-ACALA licenses removing USMC activities.

Milestones:

USMC will transfer commodities under Navy/USMC license

- Chemical Agent Monitor - 8 Jul 97 - Completed
- Fire Control Devices - Second Quarter FY98
- Chemical Agent Detector - First Quarter FY98

TACOM-ACALA will amend licenses -

- Chemical Agent Monitor - 11 Aug 97 - Completed
- Fire Control Devices - Second Quarter FY98
- Chemical Agent Detector - First Quarter FY98

d. Improve Emphasis on Correcting Inspection Finding

Background: Emphasis must be placed on the need to correct inspection findings.

Action: Improve the Command Emphasis on correcting inspection finding by providing inspection reports to the responsible MACOM through the Army Materiel Command.

Milestone: Establish process to have the AMC Chief of Staff sign all inspection reports. -
COMPLETED - Agreement by AMC Chief of Staff in Jul 97.

e. Ensure Access to Installations for Inspections

Background: In the past, inspections of installations required at least 90 days prior notice. This prevented the licensee's from conducting unannounced inspections.

Action: Headquarters AMC will request access to Training and Doctrine Command (TRADOC), Forces Command (FORSCOM) installations for unannounced inspections.

Milestones:

- Headquarters AMC send letter to TRADOC and FORSCOM - COMPLETED - 10 Apr 97
- TRADOC responds to AMC letter - COMPLETED - 23 May 97 (TRADOC agreed to inspections with a twenty-four hour notice)
- FORSCOM responds to AMC letter - COMPLETED - 29 May 97 (FORSCOM agreed to inspections with a twenty-four hour notice during umbrella weeks)

4. RADIOLOGICAL COMMODITY TRAINING

Background: Army personnel, civilian and military, interact with radioactive commodities. Regardless of the degree of involvement, personnel who handle, store, ship or otherwise process radioactive commodities, or paperwork that controls them, must receive basic radiological safety training, per the Code of Federal Regulations (CFR's) and the NRC license.

The success of the Army's Radiation Protection Program (RPP) depends on each person's knowledge of and compliance with the NRC license and the RPP. In order to inform and equip personnel to work safely with the radioactive commodities, the following actions will be implemented:

a. User Radiological Training:

Action: TACOM-ACALA will coordinate with U.S. Army Training and Doctrine Command (TRADOC) to assure that all appropriate radiological commodity training has been incorporated into applicable courses and programs of instruction at Army service schools.

Milestone:

- Send a letter to TRADOC requesting class room training be implemented - COMPLETED.
- Contact all schools to ensure appropriate radiological safety training has been added to their programs of instruction - First Quarter FY 98.

Action: TACOM-ACALA will provide licensee authorized radiological commodity training for User, Direct Support/General Support (DS/GS) and Depot level personnel on an ongoing basis. These courses could be presented by TACOM-ACALA, CECOM or other commands and utilize the Internet, compact discs (CD's) and various periodic publications to maximize distribution.

Milestone:

- Prepare and distribute training materials - Completed/ongoing
- Distribute training materials via CD's and the Internet - Completed/ongoing
- Update training materials as necessary - Ongoing
- Provide articles for publication in various Army magazines - Ongoing

b. Radiological Commodity Refresher Training:

Action: Provide refresher training for all RPO's on a regular, ongoing basis via classroom, CD's, the Internet and other sources.

Milestone: Provide refresher training materials and training - Ongoing

Action: TACOM-ACALA will establish refresher training courses for users (8-24 hours in length) to emphasize current issues and review general radiological safety. Provide refresher training materials to RPO's Army wide, to aid in the training of user and maintenance (DS/GS) level personnel.

Milestone: Provide materials for courses - Second Quarter FY 98.

5. INCIDENT REPORTING AND CONTROL

Background: Delays in reporting the damage or loss of radioactive commodities prevent the licensee from making required NRC reports timely. In order to bring about improved reporting of incidents to the licensee, and thereby the NRC, the following actions will be taken:

a. Technical Manual Review:

Action: TACOM-ACALA will review all TM's addressing radioactive commodities and ensure each TM specifies the reporting requirements for occurrences involving loss or release of radioactive materials.

Milestone: Complete review and submit necessary change requests by 1 Jan 98.

b. Incident reporting:

Action:

- TACOM-ACALA will generate an Army Technical Bulletin (TB) providing instructions for the safe handling, maintenance, storage and disposal of radioactive items licensed by the NRC to the U. S. Army through ACALA.
- TACOM-ACALA will distribute the TB via the pinpoint distribution system, the Soldiers Support Network (SSN), Compact Disc (CD) and training courses presented by ACALA and CECOM.

Milestone:

- Write TB -COMPLETED
- TB Distribution Completed - Second Quarter FY 98.

Action:

- TACOM-ACALA will write a procedure to standardize office processes for incoming incident reports.
- TACOM-ACALA will generate a user friendly data base for taking, recording and tracking incident reports.

Milestone: ACTIONS COMPLETED.

Action:

- TACOM-ACALA will write safety articles
- TACOM-ACALA will submit for publication in PS Magazine, Soldier Magazine, Infantry Magazine, the Army Logistician, the CSA Newsletter etc.

Milestone: Ongoing - periodic submissions necessary.

6. TRITIUM REDUCTION OR ELIMINATION

Background: Fire control devices containing tritium have proven to have a high potential for source breakage and release of the tritium gas. These releases present a potential for internal exposure and environmental contamination. Additionally, the control, storage, maintenance and disposal of radioactive commodities present a high cost for the Army. Using non-radioactive light sources to illuminate fire control devices would minimize those costs.

The goal of the NRC and the Army is to minimize the potential exposure and contamination of personnel and the environment to levels **As Low As Reasonably Achievable (ALARA)**. Therefore, elimination of radioactive sources or an improved containment of the tritium will be pursued via the following actions:

a. **Proposed Initiative:**

Elimination of Radioactive Light Sources (ERLS):

Action: Develop a non-radioactive means to light fire control devices. Battery/light emitting diode (LED) replacement sources have been designed and are in the approval process.

Milestone: Completion of the approval process, and fielding is projected to be completed by FY 2002.

b. **Secondary Proposals (if Elimination is Not Feasible):**

(1). Micro Encapsulation of tritium sources:

Action: Develop and produce a process to eliminate off-gassing and breakage of sources used in fire control devices. A micro encapsulation process is under development through ARDEC.

Comment: Micro-encapsulation will reduce the potential for tritium releases.

(2). Chemically capture released tritium:

Action: Develop and produce fire control devices incorporating a means to capture tritium releases from off-gassing or breakage. TACOM has developed gasket/sealing materials impregnated with a "Getter" material to chemically bind tritium gas.

Comment: "Getter" will capture tritium gas released internally. "Getter" will reduce the potential for a release of radioactive material for those items to which it can be applied.

(3). Olfactory warning system for tritium releases:

Action: Develop and produce fire control devices with a means to warn personnel of a tritium release. TACOM has proposed an odorant to provide an olfactory warning of a tritium release

Comment: While this system does not prevent the release of radioactive material, it could reduce contamination by prompting the user to take action sooner.

7. OTHER MANAGEMENT ACTIONS

a. Submit renewal to current license number 12-00722-06:

Background: License number 12-00722-06 was due for renewal as of 30 Apr 95. A renewal application was submitted and the NRC acknowledged a timely receipt as of 31 Mar 1995. To date, the renewal application has not been completed by the NRC, and many of the features of the TACOM-ACALA radiation protection program have been revamped since submittal. These changes to the TACOM-ACALA radiation protection program affect the previously submitted renewal application.

Action: The previous license renewal application must be updated and resubmitted to the NRC for their action.

Milestones: Submit license renewal - 31 October 1997

b. Ensure Possession Limits are Monitored

Background: TACOM-ACALA licenses limit the Army's possession of Tritium to no more than 1.5 million Curies, Americium-241 to 25 Curies and Nickel-63 to 1000 Curies.

Action: At least annually, TACOM-ACALA calculate the amount of material procured, amount transferred, and amount disposed. The data for this calculation will come from procurement records, records of transfer, and the Industrial Operations Command Waste Management Information System. The results of this calculation will be used by TACOM-ACALA to take action when the possessions are approached.

Milestones:

- Initial Calculation: Completed
- Next Computation: January 1998

c. Ensure RPOs are assigned

Background: Radiological concerns at many Camps, Posts and Stations are given low priority. The RPO's radiological duties are diluted by other assigned duties.

Action: Transmit a letter to each MACOM reemphasizing ownership of the Army's RPP and the high priority of the RPO's duties required in Army policy.

Milestone:

Headquarters AMC will:

- Transmit an initial letter directly to MACOM Commanders Duties - 26 Mar 97 - COMPLETED
- Transmit the letter through Headquarters, Department of the Army, for all MACOM Commanders reemphasizing these responsibilities - Sep 97.

d. Improve Distribution of Information

Background: Dissemination of training materials and information concerning radiological issues is accomplished through the RPO's. To improve distribution of training materials and other information the following action will be taken:

Action: Update licensees list of RPO and Garrison Commander phone numbers and e-mail addresses for each Camp, Post and Station.

Milestone:

- Initial Update - COMPLETED
- Maintain list - ongoing

e. Ensure Adequate Staffing in TACOM-ACALA Safety Office

Background: In order to ensure the items requirements of the NRC licenses, and the milestones listed in this corrective action plan are met successfully the TACOM-ACALA safety office must have an adequate level of staffing.

Action: Conduct a work force study of the TACOM-ACALA safety office and augment the current staff as appropriate.

Milestones:

- Complete Manpower Study - September 1997.
- Adjust Staffing Levels - First and Second Quarter FY 98.