



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2056 WESTINGS AVENUE, SUITE 400
NAPERVILLE, IL 60563-2657

September 10, 2024

EA 24-085
EN 55636
NMED No. 210534

Nathan Krzyaniak
Radiation Safety Officer
U.S. Army Tank-automotive and Armaments Command
ATTN: AMTA-SF, Mail Stop 485
6501 E Eleven Mile Rd
Detroit Arsenal, MI 48397

**SUBJECT: NRC ROUTINE INSPECTION REPORT NO. 03038500/2024001(DRSS) – U.S.
ARMY TANK-AUTOMOTIVE AND ARMAMENTS COMMAND**

Dear Nathan Krzyaniak:

On January 18, 2024, an inspector from the U.S. Nuclear Regulatory Commission (NRC) conducted a routine inspection at your Detroit Arsenal location, with continued in-office review through August 26, 2024. The purpose of the inspection was to review activities performed under your NRC license to ensure that activities were being performed in accordance with NRC requirements. The in-office review included a review of records not available at the time of the inspection. The enclosed inspection report presents the results of the inspection. The inspector discussed the preliminary inspection findings with you at the conclusion of the on-site portion of the inspection. A final exit briefing was conducted (telephonically) with you on August 26, 2024.

This inspection examined activities conducted under your license as they relate to safety and compliance with the NRC's rules and regulations and with the conditions in your license. Within these areas, the inspection consisted of an examination of selected procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, one apparent violation of NRC requirements was identified and is being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's website at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The apparent violation concerned the licensee's failure to notify the NRC within 24 hours after the discovery of an event in which equipment was disabled or failed to function as designed, as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Part 30.50(b)(2). The circumstances surrounding the apparent violation, the significance of the issues, and the need for lasting and effective corrective action were discussed with members of your staff at the inspection exit meeting conducted by Luis Nieves on August 26, 2024.

Before the NRC makes its enforcement decision, we are providing you an opportunity to (1) respond in writing to the apparent violation addressed in this inspection report within 30 days of the date of this letter, (2) request a Pre-decisional Enforcement Conference (PEC), or

(3) request Alternative Dispute Resolution (ADR). If a PEC is held, it will be open for public observation and the NRC will issue a press release to announce the time and date of the conference. **Please contact Rhex Edwards at (630) 829-9722 or Rhex.Edwards@nrc.gov within 10 days of the date of this letter to notify the NRC of your intended response or request.** A PEC should be held within 30 days and an ADR session within 45 days of the date of this letter.

If you choose to provide a written response, it should be clearly marked as "Response to the Apparent Violation in Inspection Report No. 03038500/2024001(DRSS); EA-24-085," and should include, for the apparent violation: (1) the reason for the apparent violation, or, if contested, the basis for disputing the apparent violation; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid further violations; and (4) the date when full compliance was or will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. Your response should be sent to the NRC's Document Control Desk, Washington, DC 20555-0001, with a copy mailed to the NRC Region III Office, 2056 Westings Avenue Suite 400, Naperville, Illinois 60563, within 30 days of the date of this letter. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a PEC.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on these matters and any other information that you believe the NRC should take into consideration before making an enforcement decision. The decision to hold a PEC does not mean that the NRC has determined that a violation has occurred or that enforcement action will be taken. This conference would be conducted to obtain information to assist the NRC in making an enforcement decision. The topics discussed during the conference may include information to determine whether a violation occurred, information to determine the significance of a violation, information related to the identification of a violation, and information related to any corrective actions taken or planned. In presenting your corrective actions, you should be aware that the promptness and comprehensiveness of your actions will be considered in assessing any civil penalty for the apparent violations. The guidance in NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," may be helpful in preparing your response. You can find the information notice on the NRC website at: <http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/1996/in96028.html>.

You may also request ADR mediation with the NRC in an attempt to resolve this issue. ADR is a general term encompassing various techniques for resolving conflicts using a neutral third-party. The technique that the NRC has decided to employ is mediation. Mediation is a voluntary, informal process in which a trained neutral party (the "mediator") works with parties to help them reach resolution. If the parties agree to use ADR, they select a mutually agreeable neutral mediator who has no stake in the outcome and no power to make decisions. Mediation gives parties an opportunity to discuss issues, clear up misunderstandings, be creative, find areas of agreement, and reach a final resolution of the issues. Additional information concerning the NRC's program can be obtained at <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html>. The Institute on Conflict Resolution (ICR) at Cornell University has agreed to facilitate the NRC's program as a neutral third party. **Please contact ICR at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of this issue through ADR. In addition, if you choose ADR, please also contact Rhex Edwards at the telephone number or email address listed above.**

In addition, please be advised that the number and characterization of the apparent violations described in the enclosed inspection report may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

In accordance with the NRC's "Agency Rules of Practice and Procedure" in 10 CFR 2.390, a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC's Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, any response should not include any personal privacy, proprietary, or safeguards information so that it can be made publicly available without redaction.

Please feel free to contact Luis Nieves of my staff if you have any questions regarding this inspection. Luis can be reached at 630-829-9571 or Luis.Nieves@nrc.gov.

Sincerely,



Feibus, Jonathan signing on behalf
of Curtis, David
on 09/10/24

David Curtis, Director
Division of Radiological Safety and Security

Docket No. 030-38500
License No. 21-32838-01

Enclosure: Inspection Report No. 03038500/2024001(DRSS)

cc w/encl: State of Michigan

Letter to N. Krzyaniak from D. Curtis, dated September 10, 2024.

**SUBJECT: NRC INSPECTION REPORT NO. 03038500/2024001(DRSS) – U.S. ARMY
TANK-AUTOMOTIVE AND ARMAMENTS COMMAND**

DISTRIBUTION w/encl:

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NAME	JPeralta		DCurtis:JFeibus concurring on behalf of					
DATE	9/10/24		9/10/24					

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**U.S. Nuclear Regulatory Commission
Region III**

Docket No. 030-38500

License No. 21-32838-01

Report No. 03038500/2024001(DRSS)

EA No./NMED No. EA 24-085/ 210534

Licensee: U.S. Army Tank-automotive and Armaments
Command

Facility: ATTN: AMTA-SF, Mail Stop 485
6501 E Eleven Mile Rd
Detroit Arsenal, MI 48397

Inspection Dates: January 18, 2024 - August 26, 2024

Exit Meeting Date: August 26, 2024

Inspector: Luis Nieves, Health Physicist

Approved By: Rhex Edwards, Chief
Materials Inspection Branch
Division of Radiological Safety and Security

Enclosure

EXECUTIVE SUMMARY

U.S. Army Tank-automotive and Armaments Command NRC Inspection Report 03038500/2024001(DRSS)

U.S. Army Tank-automotive and Armaments Command is authorized to possess and use a variety of military controlled devices and chemical agent detectors containing hydrogen-3 (H-3, tritium), nickel-63 (Ni-63), promethium-147 (Pm-147), strontium-90 (Sr-90), and americium-241 (Am-241) at various locations within the United States.

On January 18, 2024, the inspector identified an apparent violation of Title 10 of the *Code of Federal Regulations* (10 CFR) 30.50(b)(2) that requires that each licensee notify the NRC within 24 hours after the discovery of an event in which equipment is disabled or fails to function as designed. Specifically, between January 2020 and October 2022, seven H-3 glass capsules used in mortar sights and aiming light posts broke rendering the equipment disabled or failing to function as designed, and the NRC was not notified by the licensee.

REPORT DETAILS

1 Program Overview and Inspection History

U.S. Army Tank-automotive and Armaments Command is authorized to possess and use a variety of military controlled devices and chemical agent detectors containing hydrogen-3 (H-3, tritium), nickel-63 (Ni-63), strontium-90 (Sr-90), or americium-241 (Am-241). The licensee was also authorized to possess promethium-147 (Pm-147) for collection and disposal; although, the licensee no longer possessed any Pm-147 and is retiring all the devices that contain Am-241. The Sr-90 was used for calibrations and operational checking of instruments in the field. The licensee was authorized to use and store radioactive material at numerous locations listed on the license as part of its military activities. The licensee had significantly decreased the number of devices in its inventory since the last inspection.

2 Event Reporting

2.1 Inspection Scope

The inspector reviewed the circumstances of open Nuclear Material Events Database (NMED) items with licensee personnel and un-reported events.

2.2 Observations and Findings

On January 18, 2024, the NRC performed a routine inspection of one of the Army licenses out of Warren, Michigan. The Army possessed several models of tritium capsules, such as those used in sights for mortar models M224, M67, and M18, and aiming light post model M58. During the inspection, the Radiation Safety Officer (RSO) asked the inspector if they had to report broken tritium mortar sights containing curie (Ci) quantities of byproduct material. The RSO explained that they had eight examples of mortar sights or post lights containing tritium that broke since the last inspection. These capsules contained anywhere from 0.8 – 5 Ci of tritium and all eight tritium capsules broke on U.S. soil. The inspector brought the question back to the region, consulted with HQ and regional council, and concluded that the incidents were reportable.

The table below was provided by the Army and lists the details of each broken site. The columns labeled A(min) and A(max) indicated an estimated range of activity in Ci that was contained in each tritium capsule at the time of release. The Annual Limit on Intake (ALI) for inhalation of tritium per Appendix B of 10 CFR Part 20 is $8E+4 \mu\text{Ci}$ or 0.08 Ci. Seven out of the eight devices contained quantities in excess of the inhalation ALI for tritium at the time of the release (Incident date 1-Jan-21, item M67 level vial, did not contain a quantity in excess of the ALI for tritium at the time of release). In these instances, the tritium capsules were disabled or failed to function as designed and were the only barrier to prevent potential exposures exceeding regulatory limits. Since the glass encapsulating the tritium provided a single barrier to release, there was no redundant equipment available to provide a safety function. Therefore, in order to prevent exposures exceeding regulatory limits, the capsules were required to be available when the device was otherwise disabled or failed.

Incident Date	Item	Nuclide	A(o)	Production Start	Production End	Min time elapsed	Max time elapsed	A(min)	A(max)
1-Jun-20	M58 aiming light post	H-3	5	7/25/2006	6/17/2015	1811	5060	2.29	3.78
1-Oct-22	M224 range indicator	H-3	0.8	7/7/2007	5/5/2021	514	5565	0.34	0.74
1-Mar-20	M58 aiming light post	H-3	5	7/25/2006	6/17/2015	1719	4968	2.33	3.84
1-Jan-21	M67 level vial	H-3	0.05	4/10/2008	10/25/2023	-1027	4649	0.02	0.06
1-Feb-21	M224 range indicator	H-3	0.8	7/7/2007	5/5/2021	-93	4958	0.37	0.81
1-Feb-22	M224 range indicator	H-3	0.8	7/7/2007	5/5/2021	272	5323	0.35	0.77
1-Sep-2022	M18 quadrant	H-3	0.45	9/10/1991	3/31/2014	3076	11314	0.08	0.28
1-Jan-20	M67, unspecified	H-3	1.1	4/10/2008	10/25/2023	-1393	4283	0.57	1.36

Title 10 CFR 30.50(b)(2), requires, in part, that each licensee notify the NRC within 24 hours after the discovery of an event in which equipment is disabled or fails to function as designed when: (i) the equipment is required by regulation or license condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive materials exceeding regulatory limits, or to mitigate the consequences of an accident; (ii) the equipment is required to be available and operable when it is disabled or fails to function; and (iii) no redundant equipment is available and operable to perform the required safety function.

Contrary to the above, from January 2020 to October 2022, the licensee failed to notify the NRC within 24 hours after the discovery of an event in which equipment was disabled or failed to function as designed. Specifically, seven tritium glass capsules used in mortar sights and aiming light posts broke over two years and failed to function as designed. The glass capsules were the only safety device to prevent exposures exceeding regulatory limits, were required to be available and operable, and no other equipment was available to perform the required safety function. This is an apparent violation of 10 CFR 30.50(b)(2) and is being considered for escalated enforcement in accordance with section 2.3.4 and 6.9.c.2.d of the NRC's Enforcement Policy.

NMED No. 210534

On December 9, 2021, the licensee reported the loss of a range indicator Model M224 that contained 3.2 Ci of H-3 (EN 55636). The licensee sent their 30-day report in time, but it wasn't until July 5, 2022, when the licensee found the range indicator in their secure area where it was stored behind a box. Since the item was always in their possession and secured, no violations were identified. This NMED Item No. 210534 is considered closed.

2.3 Conclusions

The inspector identified an apparent violation of 10 CFR 30.50(b)(2) for the failure to report a safety equipment failure within 24 hours of its discovery.

3 Radiation Safety Program

3.1 Inspection Scope

The inspector interviewed licensee personnel and reviewed select records.

3.2 Observations and Findings

Through interviews with the RSO and several licensee employees, the inspector found that the licensee's staff was knowledgeable and conscientious of radiation protection

principles and licensee procedures for use, storage, transportation, and disposal of radioactive material. The inspector reviewed a selection of licensee records for inventories, material transfer, leak tests, dosimetry, disposal, and audits. The inspector also reviewed the licensee's training materials and shipping papers.

3.3 Conclusions

No violations of NRC safety requirements were identified.

4 **Exit Meeting Summary**

The NRC inspector presented preliminary inspection findings following the onsite inspection on January 18, 2024. A final exit briefing was conducted telephonically on August 26, 2024. The licensee did not identify any documents or processes reviewed by the inspector as proprietary.

LIST OF PERSONNEL CONTACTED

Nathan A. Krzyaniak, RSO

Attended exit meeting on August 26, 2024

INSPECTION PROCEDURES USED

IP 87142 – Sealed Sources and Devices (Other) Used in Measuring Systems, Analytical Instruments, Calibration and Checking of Instruments, and Similar Purposes”