



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

May 20, 2022

Dr. Robert Cherry, Radiation Safety Staff Officer
U.S. Army Installation Management Command
ATTN: IMSO/106, Bldg. 2261
2405 Gun Shed Road
JBSA Fort Sam Houston, TX 78234-1223

SUBJECT: NRC INSPECTION REPORT 040-09083/2022-001, FORT KNOX, KENTUCKY

Dear Dr. Cherry:

This letter refers to the routine, announced, U.S. Nuclear Regulatory Commission (NRC) inspection conducted on April 21, 2022, at Fort Knox, Kentucky. This inspection examined activities conducted under your license as they relate to public health and safety, the common defense and security, and to confirm compliance with the Commission's rules and regulations and the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, and interviews with personnel.

The inspection included a review of your implementation of the programmatic radiation safety plan, physical security plan, environmental radiation monitoring plan, and quality assurance project plan. An exit briefing was held with you, Joseph Colson, Safety Installation Manager and Wendy Steinhoff, Installation Radiation Safety Officer, at the conclusion of the onsite inspection. No violations were identified, and no response to this letter is required.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC's "Agency Rules of Practice and Procedure," 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 Public Document Room or from the Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <https://www.nrc.gov/reading-rm/adams.html>.

Dr. Cherry

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Should you have any questions concerning this inspection, please contact Dr. Robert Evans, Senior Health Physicist, at (817) 200-1234 or the undersigned at (817) 200-1249.

Sincerely,



Signed by Warnick, Gregory
on 05/20/22

Gregory W. Warnick, Chief
Decommissioning, ISFSI and Operating
Reactor Branch
Division of Radiological Safety and Security

Docket No. 040-09083
License No. SUC-1593

Enclosure:
NRC Inspection Report 040-09083/2022-001

cc: w/Enclosure:
MatthewW.Mckinley@ky.gov

NRC INSPECTION REPORT 040-09083/2022-001, FORT KNOX, KENTUCKY, DATED MAY 20, 2022

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cc:
 robert.n.cherry.civ@army.mil

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U.S. NUCLEAR REGULATORY COMMISSION REGION IV

Docket No. 040-09083

License No. SUC-1593

Report No. 040-09083/2022-001

Licensee: U.S. Army Installation Management Command

Location: Fort Knox, Kentucky

Date: April 21, 2022

Inspector: Orysia Masnyk Bailey, Health Physicist
Decommissioning, ISFSI, and Reactor HP Branch
Division of Radiological Safety and Security
Region I

Approved by: Gregory G. Warnick, Chief
Decommissioning, ISFSI and Operating Reactor Branch
Division of Radiological Safety and Security
Region IV

Attachment: Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

U.S. Army Installation Management Command Fort Knox, Kentucky
NRC Inspection Report 040-09083/2022-001

The U.S. Nuclear Regulatory Commission (NRC) performed a routine, announced health and safety inspection on April 21, 2022, at Fort Knox, Kentucky. The inspection included a review of records and interviews with site personnel. The inspector concluded that the licensee was conducting licensed activities in accordance with regulatory and license requirements.

Industrial/Academic/Research Programs

- The licensee implemented its various programmatic plans in accordance with license requirements. The Army continued to maintain security and control over the two ranges that may contain depleted uranium, and the Army continued to implement a radiation safety program in accordance with license requirements. The licensee continued to implement its environmental monitoring program in accordance with license requirements. The results of environmental sampling indicate that depleted uranium was not migrating from the two ranges. (Section 1.2)

Report Details

Site Status

In August 2005, the Department of the Army discovered remnants of munitions containing depleted uranium (DU) at the Schofield Army Barracks in Hawaii. These remnants were identified as spotting rounds for the Davy Crockett Weapons System. As a result of this discovery, the U.S. Army Installation Management Command applied for an NRC license in 2008. In 2013, the NRC issued Source Material License SUC-1593 to the Army for possession of DU at two locations in Hawaii. The current revision of the license, Amendment 7 dated April 29, 2022 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML22070B084), lists 16 Army installations throughout the U.S. where these spotting rounds have been, or may have been, used.

Fort Knox, Kentucky, is one of sixteen locations specified in the license where DU may be present. Fort Polk was initially established as Camp Knox, a World War 1 training center in 1918 and became a permanent garrison as Fort Knox in 1932. The Army's records indicate that spotting rounds were fired at two areas at Fort Knox, the O'Brian Range and the Arms Knob Range.

At the time of this inspection, the Army had not determined if any cleanup or retrieval of these rounds or remnants had occurred at Fort Knox; therefore, it is assumed that most, if not all, of the 760 kilograms (kg) of DU from the rounds fired remain on the ranges. The areas on the ranges where DU is suspected have been designated as Radiation Control Areas (RCA). The Army strictly controls access to the two firing ranges, and personnel rarely entered the areas for safety reasons.

1 Industrial/Academic/Research Programs (NRC Inspection Procedure 87126)

1.1 Inspection Scope

The objectives of the inspection were to determine if licensed activities were being conducted in a manner that was protective of the health and safety of workers and the general public, and to determine if licensed programs were being conducted in accordance with NRC regulatory and license requirements.

1.2 Observations and Findings

License Condition 11 states that the licensee shall conduct operations in accordance with the commitments, representations, and statements contained in the following programmatic documents:

- Radiation Safety Plan (ML21343A032)
- Physical Security Plan (ML21165A014)
- Environmental Radiation Monitoring Plan (ML21165A013)
- Quality Assurance Project Plan (ML22110A204)

The Radiation Safety Plan provides details of various aspects of the radiological safety requirements including radiation safety officer (RSO) qualifications, training, radiation control areas, authorized activities within radiation control areas, radiation safety standards, radiological surveys, supplemental environmental monitoring, inventory control, posting requirements, access control, container markings, instrumentation,

program audits, recordkeeping, emergency planning, and operating procedures. The inspector reviewed the licensee's implementation of the radiation safety plan and discussed the plan's requirements with key individuals.

The inspector confirmed that the installation RSO had the qualifications for the position. Training was provided as needed including awareness training for selected employees. At the time of the inspection, the licensee had not discovered or recovered any DU from the two ranges, thus, the licensee did not have any DU in storage and had not shipped any DU for disposal. Further, there were no changes to the radiologically restricted areas due to discovery of DU outside of the current restricted area boundaries. No personnel or equipment were scanned, or swipe tested for contamination, because the restricted areas were not routinely accessed by personnel or equipment. Since there were no entries into the restricted areas, and based on recent environmental sample results, there were no assigned doses to workers or individual members of the public. The licensee continued to maintain calibrated instrumentation to support activities involving DU, if needed. Finally, the installation RSO conducted routine audits of the radiation safety program, most recently in early February 2022.

The Physical Security Plan provides the access control requirements. The inspector observed that access to the ranges was controlled, and that access would be difficult, requiring the use of a four-wheel drive vehicle and passage through locked gates. The ranges were also posted with caution- radioactive material signs as required by License Condition 15. In summary, the Army controlled access to the base and area control for the ranges themselves.

The environmental sampling requirements are provided in the Environmental Radiation Monitoring Plan as well as License Conditions 17 and 18. Supplemental details for the sampling program are provided in the Quality Assurance Project Plan. The licensee is currently required to sample one location at Fort Knox, designated as SWS-03, on a semi-annual basis for the presence of DU. This sampling point is located on the Salt River at the installation's northern boundary, downstream from the portion of the Salt River watershed where the RCAs are located. The inspector observed employees from ARS International, LLC, obtain water and sediment samples on the day of the inspection.

Prior to the inspection, the inspector reviewed the licensee's sample results for 2021 and noted that all sample results were less than the uranium-238 to uranium-234 ratio of 3.0 as specified in License Condition 17. In other words, no sample contained DU in measurable concentrations.

1.3 Conclusions

The licensee implemented its various programmatic plans in accordance with license requirements. The Army continued to maintain security and control over the two ranges that may contain DU, and the Army continued to implement a radiation safety program in accordance with license requirements. The licensee continued to implement its environmental monitoring program in accordance with license requirements. The results of environmental sampling indicate that DU was not migrating from the two ranges.

2 Exit Meeting Summary

The inspector presented the inspection findings to the licensee at the conclusion of the onsite portion of the inspection on April 21, 2022. During the inspection, the licensee did not identify any information reviewed by the inspector as proprietary.

SUPPLEMENTAL INSPECTION INFORMATION

Partial List of Persons Contacted

Licensee Personnel

Robert Cherry, Army RSO
Joseph Colson Jr., Installation Safety Director
Arlin Kramer Jr., Range Foreman
Randy Manson, Range Management Authority
Wendy Steinhoff, Installation RSO
Robert Trail, Environmental Protection Specialist

ARS International, LLC

Kelly Ausbrooks, Director, Radiological Services Division
Amanda Meloy, Senior Radiation Technician

Inspection Procedures Used

IP 87126 Industrial/Academic/Research Programs

Items Opened, Closed and Discussed

Opened

None

Closed

None

Discussed

None

List of Acronyms

ADAMS	Agencywide Documents Access and Management System
CFR	<i>Code of Federal Regulations</i>
DU	depleted uranium
IP	NRC Inspection Procedure
Kg	kilogram
NRC	U.S. Nuclear Regulatory Commission
RCA	Radiation Controlled Area
RSO	Radiation Safety Officer