



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

February 13, 2009

TO: Docket File 030-12715

THROUGH: Jack E. Whitten, Chief */RA/*
Nuclear Materials Safety Branch B
Division of Nuclear Materials Safety

FROM: Robert Evans, CHP, PE, Senior Health Physicist */RA/*
Nuclear Materials Safety Branch B
Division of Nuclear Materials Safety

SUBJECT: DEPARTMENT OF THE ARMY SITE VISIT
DUGWAY PROVING GROUND

From September 16-17, 2008, NRC staff participated in a meeting and a site visit with the Department of the Army (Army) regarding a former 10 CFR 20.304 burial site located at Dugway Proving Ground, Utah. The meeting was held with representatives from the State of Utah, the Army, and contractors for the Army. The site tour was led by representatives from the Army. Attached to this Memorandum is the trip report regarding these activities.

Docket File 030-12715
License No. 43-01316-09 (retired)

Enclosure: NRC Trip Report

bcc w/Enclosure:

ATHowell

JEWhitten

RJEvans

RTadasse, FSME/DWMEP/DURLD

CJGrossman, FSME/DWMEP/DURLD

THYoungblood, FSME/DWMEP/DURLD

TGMcLaughlin, FSME/DWMEP/DURLD

NMSB-B

RIV Nuclear Materials File - 5th Floor

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RJEvans	JEWhitten		
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NRC TRIP REPORT

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 030-12715

License No.: 43-01316-09

Report No.: None

Licensee: Department of the Army

Facilities: Dugway Proving Ground

Location: Dugway, Utah 84022-5000

Dates: September 16-17, 2008

Inspector: Robert Evans, PE, CHP, Senior Health Physicist
Nuclear Materials Safety Branch B
Division of Nuclear Materials Safety

Accompanied by: Rebecca Tadesse, Chief
Materials Decommissioning Branch
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental
Management Programs

Thomas H. Youngblood, Health Physicist
Reactor Decommissioning Branch
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental
Management Programs

Christopher J. Grossman, Systems Performance Analyst
Performance Assessment Branch
Environmental Protection & Performance Assessment Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental
Management Programs

Approved by: Jack E. Whitten, Chief
Nuclear Materials Safety Branch B
Division of Nuclear Materials Safety

ENCLOSURE

NRC Trip Report

Background

By letter dated June 5, 2000 (ML003728143), the Department of the Army (Army) notified the NRC about the existence of a radioactive materials burial site at Dugway Proving Ground (DPG). Since that time, the Army conducted assessments of this, and many other, burial sites at DPG. The Army subsequently submitted its proposed assessment of the former radioactive material burial site to the NRC by Memorandum dated May 7, 2008 (ML082040529). In this Memorandum, the Army summarized previous site evaluation activities and outlined its options for the future.

By letter dated July 30, 2008 (ML082140020, ML082140026, ML082140029, and ML082140032), the Army submitted its Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation for Solid Waste Management Unit 11 (SWMU-11). This report documents the Army's preliminary investigations of SWMU-11 which includes the former radioactive waste burial site. As described below, the Army identified two small trenches at SWMU-11 that contain radioactive materials.

Status of License Application

The September 16-17, 2008, meetings and site tour were conducted, in part, to provide the Army with an opportunity to discuss its options for licensing the former burial site with the NRC. At the time of the site visit, the Army had an NRC license for possession of an irradiator containing sealed sources at the DPG. The Army's license for possession of loose radioactive material had been retired by the NRC during April 2001.

As noted above, by letter dated July 30, 2008, the Army provided preliminary information about the former radioactive material burial site. The letter also requested that the NRC Region IV technical staff provide guidance concerning the licensing of SWMU-11. As a result of the September 2008 discussions with the NRC, DPG officials concluded that additional internal evaluations were needed prior to the Army pursuing licensing and remediation activities. In response to these discussions, by letter dated September 24, 2008 (ML083030483), the Army requested retraction of the July 30, 2008, letter and report. Additionally, the Army expressed their plans to reconsider its options for licensing and indicated that they would provide additional information, including a timetable for future work, to the NRC at a later date. These future submittals are expected to address the radiological controls that will be necessary to manage the radioactive wastes.

At the conclusion of the September 2008 meetings, the Army had not decided whether to request a license for possession of radioactive material at SWMU-11 or to conduct reclamation activities without a license. In addition, the Army had not decided whether it would ask the NRC for a restricted or unrestricted release of the two radioactive waste trenches.

Meeting Summary

On September 16, 2008, representatives from the NRC and the Utah Department of Environmental Quality met with Army officials to discuss the Army's options for remediating the radioactive burial site. The meeting subjects included background information, an overview of SWMU-11, and current status of SWMU-11. The Army discussed its chain of command for

health physics activities. The NRC presented the Agency's regulatory process for decommissioning and licensing activities.

During the meeting, the Army provided an overview of SWMU-11. The area was previously designated by the Army as the East Granite Mountain Holding Area. SWMU-11 consisted of six trenches, five mounds, and a metal box. The initial radionuclides of concern in the ground were cobalt-60 and radium-226. The radionuclides of concern on the metal box surfaces were tritium (hydrogen-3) and carbon-14.

According to the information provided by the Army in their briefing, a Phase I investigation occurred in the early 1990's. This investigation was an attempt by the Army to determine the types of debris buried and the potential for releases. Soil samples were collected during the characterization, and the results identified non-radiological contamination. A Phase II investigation began in 1997. This Phase II investigation attempted to characterize the contamination levels for both radioactive material and chemical agents. The investigation information was collected by the Army, in part, to support a risk assessment. The investigation included radiological sampling of the soil and metal box surfaces. The metal box surfaces were subsequently determined to be free of residual radioactivity.

The Army's representatives stated that six trenches currently exist at SWMU-11. Trenches TR-1, TR-2, and TR-3 supposedly do not contain any radioactive material. The Army has investigated about half of Trench TR-4, but no radioactive material has been identified in surveys taken thus far. Trenches TR-5 and TR-6 have been briefly investigated, mostly on the surfaces of the trenches, and radioactive material has been identified in both trenches. The Army indicated, based on its preliminary assessment, Trench TR-5 may contain strontium-90, although the depth and quantity of material is unknown. Additionally, Trench TR-6 may contain cesium-137 in the form of metal tubes.

At the time of the meeting, Trenches TR-5 and TR-6 had not been completely sampled and characterized. The NRC staff expressed their reservations and concerns about the Army conducting radiological sampling of potentially loose radioactive material without an NRC-approved radiation safety program being in place. The Army, after learning of NRC's concerns, stated that the Dugway Safety Officer would not allow any intrusive activities into Trenches TR-5 and TR-6. Both the NRC and Army concluded that additional investigations and characterizations would be necessary before the Army could accurately quantify the amount of radioactive and hazardous materials in the two trenches. The NRC staff requested, and the Army agreed, it would notify the NRC prior to conducting any future intrusion activities into the Trenches TR-5 and TR-6 in order for the NRC staff to have the opportunity to be present and observe.

The Army stated that one groundwater monitoring well was installed down-gradient of the trenches at a depth of about 90-100 feet below ground surface. The Army attempted to drill a second well, but the drillers hit bedrock at about 90 feet below ground surface. Groundwater sampling was conducted under Resource Conservation and Recovery Act (RCRA) protocols, and sampling will continue into the future. The down-gradient monitoring well is sampled for both radiological and chemical constituents. To date, no licensed radioactive material has been identified in the groundwater by the Army.

During the meeting, Army representatives briefly discussed two other areas that had been investigated for radioactive material. SWMU-183 was a former bomber crash site. The Army indicated that the bomber may have been exposed to radiological agents during flight. SWMU-

41 was a location where tantalum-182 testing occurred. Both sites were described by the Army as being less than a half-acre in size. Both sites were investigated by the Army, and residual radioactivity was not identified at either site.

Site Tour

On September 17, 2008, staff from FSME and NMSB-B conducted a site tour with representatives from both the State of Utah and the Army. The site tour included SWMU-11, an area located at the northeastern corner of Granite Mountain. The area consisted of a series of open, closed, and backfilled trenches. Army representatives explained and pointed out the various trenches to the NRC staff.

The NRC inspector (NMSB-B) conducted radiological sampling using a Ludlum Model 2401P survey meter, NRC No. 21448G, with a calibration due date of July 21, 2009. The inspector measured the ambient gamma radiation exposure rates around the trenches. With a background of 15 microRoentgens per hour ($\mu\text{R/hr}$), Trench TP-4 measured around 25 $\mu\text{R/hr}$, trench TP-5 measured up to 250 $\mu\text{R/hr}$, and trench TP-6 measured up to 50 $\mu\text{R/hr}$. Measurements in trench TP-4, a potentially non-radioactive trench, may have been impacted by naturally occurring radioactive granite material located nearby. Non-radioactive metal tubes were identified on the surface of the ground during the tour. The Army representatives, when questioned by the NRC staff, were not sure if the tubes previously contained radioactive material.

Department of the Army Officials Contacted

Jeff Carter, DPG
Keller Davis, Project IRW Coordinator, Environmental Management Office, DPG
Emily Hayes, Parsons
Gregory Komp, Senior Health Physicist, Office of the Director of Army Safety
Clair McBride, Radiation Safety Officer, DPG
Mario Owens, Safety Director, Army Installation Management Command
Tanya Oxenberg, Health Physicist, U.S. Army Developmental Test Command
Paige Walton, Senior Scientist, AQS Environmental Science
Brad Wright, U.S. Army Corps of Engineers

Utah Department of Environmental Quality Officials Contacted

Craig Jones, Section Manager, Division of Radiation Control
Dave Larsen, Geologist, Division of Solid and Hazardous Waste
Doug Taylor, Environmental Scientist, Division of Solid and Hazardous Waste,



Solid Waste Management Unit 11, DPG, Utah



Possible Radioactive Materials Trench in SWMU-11, DPG