



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4511

July 8, 2019

MEMORANDUM TO: Docket File WM-0058

THROUGH: Heather J. Gepford, PhD, CHP, Chief 
Materials Licensing and Decommissioning Branch
Division of Nuclear Materials Safety

FROM: Martha R. Poston, Health Physicist /RA/
Materials Licensing and Decommissioning Branch
Division of Nuclear Materials Safety

SUBJECT: NRC OBSERVATIONAL SITE VISIT AT THE SHIPROCK, NEW MEXICO
DISPOSAL SITE

On June 12, 2019, staff from the U.S. Nuclear Regulatory Commission, Region IV office conducted an observational site visit at the U.S. Department of Energy's Shiprock disposal site located in San Juan County, New Mexico. The observational visit was conducted in accordance with NRC's guidance dated September 7, 2012 (ML12213A418). The purpose of the observational site visit was to observe the annual site surveillance activities being conducted at the site by the U. S. Department of Energy, it's contractor (Navarro Research and Engineering, Inc.), and the Navajo Nation. The annual site surveillance activities included performance of the annual site inspection, identification of needed maintenance or repairs, and assessment of the condition of the disposal cell and diversion channels to identify potential issues. Enclosed to this memorandum is the NRC's observation trip report for the site.

In summary, the Department of Energy, the contractor, and the Navajo Nation representatives continued to maintain the site in accordance with the long-term surveillance plan for the Shiprock, New Mexico (UMTRCA Title I) disposal site dated September 29, 1994. No significant regulatory issues or safety concerns were identified during the site visit.

Docket: WM-00058

License: General License pursuant to 10 CFR 40.27

Enclosure: NRC Observation Report

cc:

Joni Tallbull, Navajo Nation

Mark Kautsky, DOE-LM

**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

NRC OBSERVATION REPORT

Docket: WM-00058

License: General License pursuant to 10 CFR 40.27

Report No.: WM-0058/2019-001

Licensee: U.S. Department of Energy

Facility: Shiprock Disposal Site

Location: San Juan County, New Mexico

Date: June 12, 2019

Inspector: Martha R. Poston, Health Physicist
Materials Licensing and Decommissioning Branch
Division of Nuclear Materials Safety

Approved by: Heather J. Gepford, PhD, CHP, Chief
Materials Licensing and Decommissioning Branch
Division of Nuclear Materials Safety

Enclosure

NRC Observation Report

1 Background

The Shiprock disposal site is the location of a former uranium and vanadium-ore processing facility within the Navajo Nation in the northwest corner of New Mexico near the town of Shiprock approximately 28 miles west of Farmington. Kerr-McGee built the mill and operated the facility from 1954 to 1963. Vanadium Corporation purchased the facility and operated in until it closed in 1968. The site of the mill, ore storage area, raffinate ponds and tailings piles occupied approximately 230 acres leased from the Navajo Nation. The Shiprock disposal site is held in trust by the U.S. Bureau of Indian Affairs.

The site is classified as a Title I site under the Uranium Mill Tailings Radiation Control Act (UMTRCA) as promulgated by the U.S. Environmental Protection Agency in Title 40 of the *Code of Federal Regulations* (CFR), Part 192 [40 CFR 192]. Under UMTRCA, the U.S. Department of Energy (DOE) is the licensee and is responsible for custody and long-term care of the site. The DOE and Navajo Nation executed a custodial access agreement that conveys to the federal government title to the residual radioactive materials stabilized at the site and ensures that DOE has perpetual access to the site.

The DOE completed the remediation of the Shiprock disposal site in 1986, reducing the footprint from 230 acres to 145 acres. The NRC issued a general license for the site under Title 10 CFR Part 40. The disposal cell contains approximately 2.5 million tons of residual radioactive wastes including mill tailings. The disposal cell covers approximately 77 acres of the 145-acre site.

2 Site Status

The site consists of a disposal cell located within a fenced boundary. The above-grade disposal cell is an asymmetrical pentagon with a maximum height of 49 feet (15 meters) above ground level. A rock-lined drainage ditch on the north and west sides of the disposal cell directs run off water to a rock-lined dissipation area. The disposal cell was constructed with a rip-rap layer, bedding layers and radon barrier over the contaminated materials. The DOE currently has 17 perimeter signs, 2 site markers, 3 survey monuments, 6 boundary monuments, and 4 pairs of erosion control markers at the site.

Title 10 CFR 40.27(c) states that the DOE shall implement the long-term surveillance plan (LTSP) and care for the disposal site in accordance with the provision of the LTSP. The LTSP is used by DOE and its contractor during its annual inspection. The Shiprock LTSP does not require groundwater monitoring. The Shiprock site has an NRC-approved Groundwater Compliance Action Plan, dated July 2002, for remediation of legacy groundwater contamination. These activities are not addressed in the LTSP as they are not related to the long-term disposal and stabilization of contaminated materials within the disposal cell. Groundwater activities were not reviewed during this observational site visit. Inspection of the Groundwater Compliance Action Plan is performed by the DOE twice a year. The NRC may observe the implementation of the groundwater monitoring and remediation program in a future observational site visit.

3 Site Observations and Findings

The DOE contractors used an inspection checklist to conduct the annual inspection. The checklist included requirements to inspect the entrance signs, gates, perimeter signs, perimeter fence, site markers, survey monuments, boundary monuments, erosion control markers, disposal cell top and side slopes, diversion channels, and outflow channels under the LTSP. The checklist also included inspection of activities and conditions outside the LTSP such as condition of monitoring wells and outlying areas, and observation of the status of deep-rooted vegetation that could impact the integrity of the cell.

Prior to the start of the inspection, the DOE contractor conducted a safety briefing of the hazards to be aware of at the site, a pre-job briefing discussing the activities to be conducted, and a review of the inspection checklist. During the inspection, the DOE contractors observed that the fences were adequately intact, site and survey markers and monuments were in place, and the gates were intact and functional. The DOE contractors also verified that boundary marker repairs identified during the 2018 inspection had been completed.

Some accumulation of sand and other debris was noted along the fence line shared with the Navaho Engineering and Construction Authority (NECA). Minor damage and bowing of the fence along this shared boundary was also noted. The damage appeared to be the result of use of heavy equipment or the placement of equipment on the fence on the NECA side of the fence. Removal of sand and equipment will be discussed with NECA. Some perimeter signs showed signs of fading and the contractor indicated they would be marked as needing replacement. The DOE representative and DOE contractors did not identify any significant problems during the annual inspection that required immediate contingency actions.

The NRC inspector measured the ambient gamma exposure rates using a hand-held Ludlum Model 19 survey meter (Serial No. 32888, calibration due date July 12, 2018). With a background of 10 microroentgen per hour ($\mu\text{R/hr}$), measurements ranged from background to 12 $\mu\text{R/hr}$. The survey results indicated that the site property was at background levels.

4 Conclusions

The licensee appeared to be maintaining the site in accordance with requirements as defined in the LTSP. The NRC staff did not identify any significant safety issues during the site tour.

5 Persons Contacted

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