



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

September 25, 2018

Oscar Paulson
Facility Supervisor
Kennecott Uranium Co.
P.O. Box 1500
Rawlins, WY 82301-1500

SUBJECT: KENNECOTT URANIUM COMPANY - NRC INSPECTION REPORT
040-08584/2018-001

Dear Mr. Paulson:

This letter refers to the announced, routine U.S. Nuclear Regulatory Commission's (NRC's) inspection that was conducted on August 29, 2018, at your Sweetwater Project in Sweetwater County, Wyoming. This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

The inspection findings were presented to you at the conclusion of the onsite inspection. The enclosed report presents the results of this inspection. Based on the results of this inspection, no violations were identified and no response to this letter is required.

In accordance with 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 NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

O. Paulson

2

Should you have any questions concerning this inspection, please contact Ms. Linda M. Gersey at 817-200-1299 or the undersigned at 817-200-1151.

Sincerely,

/RA/

Janine F. Katanic, PhD, CHP, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Docket: 040-08584

License: SUA-1350

Enclosure:

NRC Inspection Report 040-08584/2018-001

cc w/enclosure:

R. Schierman, WY Uranium Recovery Program Manager

G. Cameron, Wyoming Homeland Security

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

Docket: 040-08584

License: SUA-1350

Report: 040-08584/2018-001

Licensee: Kennecott Uranium Company

Facility: Sweetwater Project

Location: Sweetwater County, Wyoming

Inspection Date: August 29, 2018

Inspector: Linda Gersey, Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Approved by: Janine F. Katanic, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Kennecott Uranium Company NRC Inspection Report 040-08584/2018-001

This inspection was an announced, routine inspection of activities being conducted at the standby Sweetwater Project in Sweetwater County, Wyoming. In summary, the licensee was conducting standby activities in accordance with license and regulatory requirements.

Management Organization and Controls

- The licensee conducted routine site activities in accordance with license and regulatory requirements. The licensee had sufficient staff for the work in progress, conducted safety evaluations as allowed by the license, conducted annual program reviews as required by regulations, and established and maintained site procedures as required by the license. (Section 1.2)

Radiation Protection

- The licensee implemented a radiation protection program that was in compliance with Title 10 of the *Code of Federal Regulations* Part 20 requirements and the license. Occupational exposures for 2016-2017 were well below regulatory limits. (Section 2.2)

Radioactive Waste Management

- The licensee continued to inspect and maintain the tailings impoundment in accordance with license requirements. The tailings impoundment appeared to be in good condition with no observable leaks or erosion. (Section 3.2)

Report Details

Site Status

The Sweetwater Project conventional uranium mill was constructed in 1980. The mill operated from 1981-1983. The mill has been in standby since 1983. Structures still in place at the site include the mill building, solvent extraction building, maintenance shop, and administrative building. A 60-acre tailings impoundment is located at the site, and the impoundment contains approximately 2.5 million tons of tailings material. Several evaporation ponds are located within the perimeter of the tailings impoundment.

In 2004, the licensee excavated approximately 450,000 cubic yards of diesel-contaminated soils from underneath the former diesel tanks. The tanks were located on site property but outside of the radiologically restricted area. The licensee constructed a land farm to bio-remediate the soil. At the time of the inspection, the licensee was almost complete with its bio-remediation of the soil. In the near future, the licensee plans to refill the excavated pit with remediated soil and other non-contaminated debris.

By letter dated July 24, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14251A115), the licensee submitted to the NRC a license application for the renewal of Materials License SUA-1350. The NRC approved the licensee's renewal application and issued a revised license on July 5, 2018 (ADAMS Accession Nos. ML18102B176, ML18102B175, and ML18052B381). Concurrent with the license renewal, the NRC also approved the licensee's request to construct an additional tailings impoundment and evaporation ponds for future operations. A significant change to the July 5, 2018, license includes the licensee's groundwater corrective actions program. Revised License Condition (LC) 13 requires, in part, that the licensee fully characterize the extent of groundwater contamination and submit a revised groundwater corrective action plan to the NRC for review and approval within six months of receipt of the license. During the inspection, the inspector did not review the activities related to the revised groundwater corrective action plan since the licensee had not completed the groundwater characterization.

By letter dated May 26, 2016 (ADAMS Accession No. ML16160A360), the licensee requested a 5-year postponement of the initiation of the requirements for timely decommissioning of the Sweetwater Project per Title 10 of the *Code of Federal Regulations* (CFR) 40.42(f). The licensee's May 26, 2016, request was the fifth request submitted to the NRC since 1996 for postponement of decommissioning. At the time of the onsite inspection, the NRC had not responded to the licensee's extension request.

Activities in progress during the inspection included routine license compliance work such as site maintenance, environmental monitoring, and characterization of the groundwater plume. The licensee's staff continued to maintain the equipment located within the mill while the mill remained in standby.

Following the September 2016 inspection, NRC staff determined that routine inspections did not need to be completed in strict accordance with the NRC's Manual Chapter 2801, "Uranium Mill 11e.(2) Byproduct Material Disposal Site and Facility Inspection Program" (found at <https://www.nrc.gov/reading-rm/doc-collections/insp-manual/manual-chapter/>). This determination was based on the limited activity of the licensee due to standby status and no violations identified during the previous inspection. The NRC staff anticipates the inspection frequency at this licensee to continue on a biennial basis.

1 Management Organization and Control (88005)

1.1 Inspection Scope

Ensure that the licensee and its contracted workforce are conducting activities in accordance with license and regulatory requirements.

1.2 Observations and Findings

At the time of the inspection, site employees included the facility supervisor who was also the radiation safety officer, administrative coordinator, resident facility technician, site operations technician, and two contract security guards. In addition, the licensee used contractors as needed to conduct non-routine work, such as tailings impoundment liner repairs, fence repairs, and general site maintenance work. Staffing levels were similar to the levels described in the previous inspection report dated October 3, 2016 (ADAMS Accession No. ML16273A138). The inspector concluded that the licensee had sufficient staff for maintaining compliance with regulatory and license requirements.

In accordance with LC 9.3, the licensee is authorized to make changes to the facility, without prior NRC approval, under certain conditions. The inspector reviewed the licensee's safety and environmental evaluations (SEE) completed since the previous inspection. In 2016, the licensee performed one SEE related to the organizational change when a new Resident Facility Technician was hired. In 2017, the licensee performed one SEE related to the change in the reporting of the Facility Supervisor to the General Manager, RTSS America. The licensee summarized the SEEs in the annual As Low As Reasonably Achievable (ALARA) Audit reports to the NRC dated February 7, 2017, and January 31, 2018 (ADAMS Accession Nos. ML17157B555 and ML18079A023, respectively) as required by LC 12.3. The inspector concluded that the changes did not require prior NRC approval.

Title 10 of the *Code of Federal Regulations* 20.1101(c) requires that licensees periodically (at least annually) review the radiation protection program content and implementation. In addition, LC 12.3 requires that the licensee to submit the ALARA Audit to the NRC on an annual basis. The inspector reviewed the annual ALARA Audits for 2016 and 2017. The audits were found to be comprehensive and included discussion of employee exposures, bioassay results, site inspections, training, meetings, radiological survey results, safety and environmental review panel summaries, and potential trends in worker doses. The inspector concluded that the licensee had performed the annual ALARA Audits in accordance with license and regulatory requirements.

License Conditions 9.6 and 12.1 specify that site procedures shall be established and reviewed at least annually. The inspector confirmed that the Facility Supervisor reviewed the procedures annually from 2016-2017. The inspector reviewed select portions of the procedure manuals and concluded that the procedures were comprehensive, thorough, and accurate.

1.3 Conclusions

The licensee conducted site activities in accordance with license and regulatory requirements. The licensee had sufficient staff for the work in progress, conducted

safety evaluations as allowed by the license, conducted annual program reviews as required by regulations, and established and maintained site procedures as required by the license.

2 Radiation Protection (83822)

2.1 Inspection Scope

Ensure that the licensee's radiation protection and training programs are in compliance with Title 10 of the *Code of Federal Regulations* 20 requirements and the license.

2.2 Observations and Findings

The inspectors reviewed the licensee's occupational dose assessments for 2016-2017. As allowed by Title 10 of the *Code of Federal Regulations* 20.1502, the licensee is not required to conduct individual monitoring of external and internal occupational doses if an adult is likely to receive less than 10 percent of the applicable regulatory dose limits per year. The licensee continued to document that occupational doses were less than 10 percent of the annual dose in each annual ALARA audit.

The licensee calculated occupational exposures using a combination of external exposure rates, personal dosimeters, exposures to radon, and exposures to air particulates. When required, doses from work controlled by radiation work permits (RWPs) were also added to the annual exposures, although the licensee did not issue any RWPs since the previous inspection. The licensee's records indicate that the highest total effective dose equivalent exposure for employees was 18.5 millirem in 2016, and 21.2 millirem in 2017, with a regulatory limit of 5000 millirem per year. The inspector concluded that the licensee was maintaining occupational radiation exposures well below the regulatory requirements.

The licensee conducted monthly bioassays to monitor for potential uptakes of uranium. No sample result exceeded the lowest action level since the previous inspection. The licensee also calculated the weekly maximum soluble uranium intake for comparison to the 10 milligram per week limit specified in Title 10 of the *Code of Federal Regulations* 20.1201(e). The licensee's records indicate that the maximum weekly intake of soluble uranium during 2016 for an individual was 0.04 milligrams per week. During 2017, the maximum weekly intake for an individual was 0.06 milligrams per week. The inspector concluded that the individual uranium intakes for 2016-2017 were below the regulatory limit.

The inspector reviewed the licensee's implementation of its radiation protection program. The licensee conducted gamma exposure rate surveys every six months in both restricted and unrestricted areas. These survey results were recorded and were used in the licensee's annual dose assessments. The licensee also conducted semi-annual contamination surveys in the restricted and unrestricted areas. The licensee's records for 2016-2017 indicated that no contamination was identified in the unrestricted areas. In addition, the licensee maintained records of equipment releases. These equipment releases were summarized in the annual ALARA Audits. The licensee also maintained records of instrument calibrations. The inspector concluded that the licensee was implementing the radiation protection program as required by the license and regulatory requirements.

The inspector reviewed the licensee's training records for 2016 through August 2018. The licensee's records indicated that workers were provided with routine radiation safety, respirator, industrial safety, driver safety, weekly safety meetings, and fire safety training. Contractors received training as needed based on their work assignments. The licensee also conducted training for shipping radioactive material in accordance with the U.S. Department of Transportation Hazardous Materials Training, although no radioactive material shipments had been conducted since the previous inspection. The inspector concluded that the licensee was implementing the training program in accordance with license requirements.

The inspector conducted independent radiological surveys during the site tour. The inspector measured the ambient gamma exposure rates using a Ludlum Model 19 microRoentgen survey meter, calibrated with radium-226 (NRC Number 015530, calibration due date of July 12, 2019). The exposure rate at the top of the tailings embankment was found to be 32 microRoentgen per hour, which was similar to the background ambient gamma exposure rate.

2.3 Conclusions

The licensee implemented a radiation protection program that was in compliance with Title 10 of the *Code of Federal Regulations* 20 requirements and the license. Occupational exposures for 2016-2017 were well below regulatory limits.

3 **Radioactive Waste Management (88035)**

3.1 Inspection Scope

Determine if the licensee had established and maintained an effective program for managing radioactive wastes.

3.2 Observations and Findings

The inspector conducted a site tour to observe activities in progress and equipment in operation. The mill buildings were posted in accordance with LC 9.9 requirements. The inspector observed that the tailings impoundment embankments were in generally good condition. The inspector did not identify any leaks or significant erosion during site tours.

In accordance with LC 10.6, the licensee continued to conduct weekly impoundment inspections. The inspector reviewed a select number of weekly impoundment reports and found them to be in compliance with LC 10.6. A contract engineer conducted annual inspections of the tailings impoundment and the diversion channel. The results of these inspections were presented in the annual reports. The 2016 and 2017 reports by the contract engineer state that the tailings impoundment liner is in good condition and it is anticipated that the liner will function as designed if licensee maintenance continues.

3.3 Conclusions

The licensee continued to inspect and maintain the tailings impoundment in accordance with license requirements. The tailings impoundment appeared to be in good condition with no observable leaks or erosion.

4 Exit Meeting Summary

The inspector presented the inspection results to Mr. Oscar Paulson, Facility Supervisor, at the conclusion of the onsite inspection on August 29, 2018. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

O. Paulson, Facility Supervisor

Wyoming Department of Environmental Quality

R. Schierman, Uranium Recovery Program Manager, Land Quality Division

G. Cameron, Wyoming Homeland Security

INSPECTION PROCEDURES (IPs) USED

IP 83822	Radiation Protection
IP 88005	Management Organization and Controls
IP 88035	Radioactive Waste Management

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
GCAP	Groundwater Corrective Action Plan
IP	Inspection Procedure
LC	License Condition
NRC	U.S. Nuclear Regulatory Commission
RWP	Radiation Work Permit
SEE	Safety and Environmental Evaluations

KENNECOTT URANIUM COMPANY - NRC INSPECTION REPORT 040-08584/2018-001 –
DATED SEPTEMBER 25, 2018

Distribution:

KKennedy, ORA
SMorris, ORA
TPruett, DNMS
LHowell, DNMS
JKatanic, FCDB
LGersey, FCDB
R4DNMS_FCDB
JWebb, NMSS
BVonTill, NMSS

ADAMS ACCESSION NUMBER: ML18267A188

<input checked="" type="checkbox"/> SUNSI Review By: LMG	ADAMS: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Sensitive <input checked="" type="checkbox"/> Non-Sensitive	<input type="checkbox"/> Non-Publicly Available <input checked="" type="checkbox"/> Publicly Available	Keyword NRC-002
OFFICE	DNMS/FCDB	BC:FCDB		
NAME	LMGersey	JFKatanic		
SIGNATURE	/RA/	/RA/		
DATE	9/24/18	9/25/18		

OFFICIAL RECORD COPY