



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4005

August 19, 2004

Mr. Oscar Paulson
Kennecott Uranium Company
P.O. Box 1500
Rawlins, Wyoming 82301

SUBJECT: NRC INSPECTION REPORT 040-08584/04-001

Dear Mr. Paulson:

On July 21, 2004, the NRC completed an inspection of your Sweetwater Uranium Facility, which continues in a standby status. The enclosed report presents the results of that inspection. No violations or deviations were cited; therefore, no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Judith Walker at 817 860-8221 or the undersigned 817-860-8197.

Sincerely,

/RA ADGaines for/

Jack E. Whitten, Chief
Nuclear Materials Licensing Branch

Docket No.: 040-08584
License No.: SUA-1350

Enclosure:
NRC Inspection Report
040-08584/01-001

cc w/enclosure:

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 040-08584
License No.: SUA-1350
Report No.: 040-08584/04-001
Licensee: Kennecott Uranium Company
Facility: Sweetwater Uranium Facility
Location: Sweetwater County, Wyoming
Dates: July 21, 2004
Inspector: Judith Walker, Health Physicist
Nuclear Materials Licensing Branch
Approved By: Jack E. Whitten, Chief
Nuclear Materials Licensing Branch
Attachments: Supplemental Inspection Information

EXECUTIVE SUMMARY

Sweetwater Uranium Facility NRC Inspection Report 040-08584/04-001

This inspection included a review of site status, management organization and controls, site operation, radiation protection, radioactive waste management, and environmental protection programs. The facility continues to be in a standby status as it has been since 1983.

Management Organization and Controls

- The licensee's organization structure was consistent with the conditions of the license. Adequate oversight had been provided for site activities. Procedures were deemed adequate for the work in progress. The licensee had appropriately implemented the performance-based license and the safety and environmental review panel process (Section 2).

Operations Review and Radioactive Waste Management

- Site activities had been conducted in accordance with the applicable license and regulatory requirements. The mill and other onsite structures were maintained in good condition. Site fences were in good condition. Perimeter postings were appropriate. No significant health or safety concerns were identified during the site tours (Section 3).

Radiation Protection

- The licensee had implemented a radiation protection program as required by 10 CFR Part 20 and the license. Occupational exposures during 2002 and 2003 were below the limits established in 10 CFR Part 20. Other program areas deemed satisfactory included training, equipment calibration, radiation, and As Low As Reasonably Achievable (ALARA) programs (Section 4).

Environmental Protection

- The licensee had conducted the environmental and groundwater monitoring programs and the annual land use survey in compliance with license requirements. All reports related to the groundwater and environmental monitoring programs had been submitted to the NRC as required. The reports were thorough and technically accurate. Laboratory documentation demonstrated that releases of radioactive materials to the environment were within regulatory limits from 2002 through 2003 (Section 5).

Report Details

1 Site Status

The Sweetwater Uranium Facility was built by the Minerals Exploration Company in 1980 and operated until 1983 when the facility was shutdown and placed in a standby mode. Structures in place at the site included the uranium mill, maintenance shop, administrative building, and other miscellaneous structures. A 60-acre tailings impoundment was also located at the site, with approximately 2.5 million tons of tailings being stored.

Site activities included maintenance of the tailings impoundment, mill/general facility maintenance, groundwater and environmental monitoring, and environmental remediation. The licensee continues to store contaminated equipment from the Pathfinder Lucky Mc remediation project.

2 Management Organization and Controls (88005)

2.1 Inspection Scope

The organization structure was reviewed to ensure that the licensee had established an organization with defined responsibilities and functions. The site standard operating procedures (SOP) were reviewed.

2.2 Observations and Findings

a. Management Organization

Site staffing requirements are established in License Condition 9.5. Site staffing consisted of four employees, including the facility supervisor, senior facility technician, mill foreman, and office manager. In addition, two contract security guards provided oversight of the facility during non-standard work hours. The site organization and staff were in accordance with the requirements of License Condition 9.5.

b. Management Controls

License Condition 9.6 requires SOPs to be established and implemented for all operational process activities involving radioactive materials that are handled, processed, or stored. SOPs were also required for all aspects of the radiation safety and environmental monitoring programs. Overall, site procedures had been established and were adequate for the work in progress at the site. SOPs had been updated and records indicated that the procedures had been reviewed on an annual basis.

c. Performance-Based License and the Safety and Environmental Review Panel

The licensee was issued a performance-based license (PBL) in July 1999. License Condition 9.3 of the PBL requires the licensee to establish a safety and environmental review panel (SERP). The SERP is required to ensure that changes to the facility and procedures, and tests or experiments which have not been reviewed by the NRC do not have adverse affects on systems, structures, components, and the operation of the facility. The licensee had established a SERP for pre-screening of radiation work permits and proposed changes. The inspector reviewed three safety environmental evaluations (SEE) that had been reviewed by the SERP.

- SEE#6: "Pump Test/Recovery of Perched Fluids Leaked from the Bottom of the Facility Catchment Basin During Facility Operation Discovered at a Depth of Thirty-Five (35) to Fifty-Five (55) Feet Below Surface In a Well Approximately Twenty (20) Feet East of the Basin," dated September 4, 2003.
- SEE#6: (Amendment) "Recovery of Perched Fluids Leaked from the Bottom of the Facility Catchment Basin During Facility Operations Discovered in TMW-105," dated March 23, 2004.
- SEE#7: "Diversion of Surface Runoff Entering the Catchment Basin," dated November 11, 2003.

The SEEs addressed remediation of diesel organic contamination which was the result of previous operations conducted between 1980 and 1983. The SEEs were found to be technically adequate. The SERP had made decisions in accordance with the conditions of the performance-based license. By the letter dated May 12, 2004, the licensee requested an amendment to the license to address the remediation of soil and groundwater contamination discovered in the area of the facility's catchment basin. The inspector determined that licensee's implementation of the PBL and SERP was adequate.

2.3 Conclusions

The licensee's organization structure was consistent with the conditions of the license. Adequate oversight had been provided for site activities. Procedures were deemed adequate for the work in progress. The licensee had appropriately implemented the performance-based license and the safety and environmental review panel process.

3 Operations Review (88020) and Radioactive Waste Management (88035)

3.1 Inspection Scope

A facility tour was performed to verify that site activities were being conducted in accordance with applicable regulations and the conditions of the license and to ensure that operational controls were adequate to protect the health and safety of workers and members of the general public.

3.2 Observations and Findings

During the plant tour, site buildings, fences, gates, and operating equipment were observed. Site fences were in good condition and were properly posted in accordance with License Condition 9.9. Site structures and mill components appeared to have been properly preserved and maintained. Approximately 20,000 pounds of material containing U_3O_8 remained stored in 55-gallon drums and in a tank in the mill. The latter material was being maintained in a slurry form. Access to the material was controlled by the licensee.

The inspector toured the tailings impoundment and noted that the groundwater enhanced evaporation system was in service. The inspector observed that a sufficient amount of freeboard existed between the top of the pond surface and the top of the pond embankments in compliance with the requirements of License Condition 10.3. The inspector also noted that the licensee inspected the tailings impoundment on a daily/weekly basis. The licensee also contracted an outside engineer to perform annual inspections of the tailings impoundment. The annual inspection noted minor localized erosion of the impoundment liner, but concluded that the overall integrity was sufficient.

The tailings impoundment sprays and evaporation system were placed into service May 1997. Seven monitoring pumpback wells were in service in 2001.

3.3 Conclusions

Site activities had been conducted in accordance with the applicable license and regulatory requirements. The mill and other onsite structures were maintained in good condition. Site fences were in good condition. Perimeter postings were appropriate. No significant health or safety concerns were identified during the site tours.

4 Radiation Protection (83822)

4.1 Inspection Scope

The licensee's radiation protection program was reviewed for compliance with the requirements established in the license and 10 CFR Part 20 regulations.

4.2 Observations and Findings

a. Personnel Internal and External Exposures

To ensure that site workers had been properly monitored for potential exposures to radioactive materials, the licensee's internal and external monitoring programs were reviewed. The licensee's personnel monitoring program consisted of intermittent air sampling, surface contamination monitoring, and external radiation measurements.

Personnel dosimetry for the site is only required during full operations; however, during 2001, 11e.(2) byproduct material was received and disposed on-site; therefore, thermoluminescent dosimeters were issued to employees and contractors for that period. The highest exposure for an individual for 2001 was 40 millirem. During 2002 the licensee performed an occupational exposure assessment and in 2003 the licensee performed a determination of no requirement for individual monitoring. The results in both assessments determined that personnel did not receive an occupational dose in excess of 10 percent of the limits for external and internal exposure. These demonstration results were based on the amount of time personnel spent in the mill and on the tailings impoundment. The demonstration included radiation survey data such as gamma surveys, radon measurements, and airborne particulate results from high volume and breathing zone samplers.

The air sample results indicated that the natural uranium concentrations in the air remained less than 1 percent of the derived air concentration (DAC) limit listed in 10 CFR Part 20, Appendix B. In 2001, 2002 and 2003, radon daughter concentrations measured from 0.016 to 0.053 working level (WL) or 16 percent or less of the DAC limit of 0.33 WL. The licensee monitored individuals with breathing zone samplers on a quarterly basis. The natural uranium concentrations in these samples for 2001, 2002, and 2003 were less than 10 percent of the DAC limit.

Overall, the licensee determined that site employees had received less than 10 percent of the occupational dose limit (5000 millirems) established in 10 CFR 20.1201 from either external or internal exposures.

During the site tour, the inspector observed the licensee performing ambient radiation surveys using a microRoentgen meter. The licensee did not identify any area that met the 10 CFR 20.1003 definition of a radiation area (greater than 5 millirems per hour). The highest exposure areas measured 0.317-0.519 millirems per hour in the central processing facility. The licensee continued to measure external radiation exposure rates on a semi-annual basis. The inspector reviewed the licensee's June 2004 exposure rate data from the tailings impoundment. According to licensee survey records, there were no areas in the plant or the tailings impoundment that met the definition of a radiation area.

b. Bioassay Program

The licensee performed bioassay sampling on a quarterly basis. Personnel tested included contract workers and individuals who were potentially exposed to radioactive materials. During the years 2002 and 2003, site personnel and contract workers submitted urine samples for laboratory analysis. No sample results exceeded the lowest action level of 15 micrograms of uranium per liter of urine.

c. Employee Training

License Condition 9.5 requires the licensee to conduct initial and annual refresher training for all mill process or maintenance employees as specified by the topics listed in Section 5.3 of the March 1984 renewal application and 10 CFR 19.12. The licensee is required to document employee radiation safety training. The inspector confirmed that the licensee had conducted and documented annual training for all employees in February of 2002, 2003 and 2004. The radiation safety officer (RSO) had completed the biennial RSO retraining in 2003. The inspector determined that the licensee was in compliance with License Condition 9.5 and 10 CFR 19.12.

d. Equipment Calibrations

License Condition 9.5 requires the licensee to calibrate all radiation monitoring, sampling, and detection equipment annually or as recommended by the manufacturer, whichever is more frequent. The licensee had established a semi-annual instrument calibration program for all instruments including survey meters, laboratory instruments, and air samplers. A review of selected instrument calibration records from August 2002 to May 2004, revealed that the instruments had been calibrated as required. Additionally, the inspector reviewed the licensee's instrument calibration chart from the years 2001 - 2003, which identified that all radiation instruments had been calibrated at the required intervals.

e. Release of Equipment for Unrestricted Use

License Condition 9.5 requires that the release of equipment or packages from the restricted area be in accordance with the NRC report, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials," dated September 1984. A review of the licensee's equipment release records indicated that all components had been appropriately released by the licensee during years 2002 - 2004.

f. Annual As Low As is Reasonably Achievable (ALARA) Audit

License Conditions 9.3D and 12.3 require the licensee to perform an annual ALARA audit. License Condition 12.3 requires the report to be submitted to the NRC. For the years 2002 - 2003, the licensee performed and submitted annual ALARA audits to NRC for review. The reports were thorough and provided relevant information including analysis of trends.

4.3 Conclusions

The licensee had implemented a radiation protection program as required by 10 CFR Part 20 and the license. Occupational exposures during the years 2002 and 2003 were below the limits established in 10 CFR Part 20. Other program areas deemed satisfactory included the training, equipment calibration, radiation, and ALARA programs.

5 **Environmental Protection (88045)**

5.1 Inspection Scope

The environmental monitoring program was reviewed to assess the effectiveness of the licensee's program and to evaluate the effects, if any, of site activities on the local environment. The groundwater compliance monitoring program was reviewed to verify that the program was consistent with the requirements specified in the license.

5.2. Observations and Findings

a. Environmental Protection

License Condition 11.5 requires the licensee to submit the results of all effluent and environmental monitoring to the NRC on a semi-annual basis. Environmental monitoring program requirements are identified in License Condition 11.5. During mill shutdown, air particulate, radon, and gamma monitoring are required to be conducted downwind of the tailings cell. Also, radon monitoring is required at an upwind location.

The inspector reviewed the licensee's years 2002 and 2003 semi-annual effluent reports dated February 10, and August 13, 2003 and February 18, 2004. These reports were found to be thorough and complete. The licensee appeared to have obtained all environmental monitoring samples required by the license, and the results were documented in the reports. Air samples had been collected at the environmental monitoring sample station No. 4A located downwind of the site. During the years 2002 and 2003, the air sample filters were composited and analyzed quarterly for natural uranium, thorium-230, lead-210 and radium-226. Laboratory results indicated that all samples were less than 2.8 percent of the effluent concentration limits established in 10 CFR Part 20, Appendix B.

Ambient gamma exposure rates were measured at Sample Station No. 4A and at a controlled location in the administrative building. Data collected during the years 2002 and 2003 indicated that Station No. 4A measured near background for the year.

Radon-222 samples were obtained at two sample stations. The highest radon measurements during the years 2002 and 2003 were obtained at Sample Station No. 2 upwind of the site. The samples measured 4.2 and 3.9 picocuries per liter which was 42 and 39 percent of the 10 CFR Part 20, Appendix B, effluent concentration limit for the respective years. Radon sample results (with daughters removed) for the years 2002 and 2003 measured 0.42 and 0.39 percent of the 10 CFR Part 20, Appendix B, effluent concentration limit.

The inspector's comparison of environmental monitoring data during the years 2002 and 2003 indicated that the results were comparable.

b. Groundwater Compliance Monitoring Program

A groundwater compliance monitoring program is required by License Conditions 11.3 and 12.3. The licensee's groundwater compliance program included over 40 tailings monitoring wells and point-of-compliance wells. The program analyzed the wells for chemical and radiological constituents and currently operates seven pumpback wells to extract groundwater. The groundwater was discharged into the tailings impoundment which contains an enhanced evaporation system to dispose of the groundwater in the tailings impoundment. The licensee had obtained the samples and operated the pumps and evaporation system as required by the license during the years 2002 and 2003.

A groundwater corrective action program review is required to be submitted to the NRC on an annual basis in accordance with License Condition 12.3. The licensee's annual corrective action program reports dated February 10, 2003 and February 11, 2004, were briefly reviewed during the inspection. The inspector determined that the licensee had maintained a groundwater corrective action program as required by License Conditions 11.3 and 12.3.

c. Annual Land Use Survey

License Condition 11.2 stipulates that a land use survey be performed annually. The land use survey is required to be submitted to the NRC on an annual basis by License Condition 12.3. The inspector reviewed annual land use survey for the years 2001, 2002, and 2003. The licensee reported no significant changes in land use within a 5-mile radius of the site were identified, except in 2002 where the licensee performed excavation of diesel contaminated soil north of the Main Shop Building (Section 2.2 c.).

5.3 Conclusions

The licensee had conducted the environmental and groundwater monitoring programs and the annual land use survey in compliance with license requirements. All reports related to the groundwater and environmental monitoring programs had been submitted to the NRC as required. The reports were thorough and technically accurate. Laboratory documentation demonstrated that releases of radioactive materials to the environment were within regulatory limits from the years 2002 through 2003.

6 **Exit Meeting Summary**

The inspector presented the inspection results to the representatives of the licensee at the conclusion of the inspection on July 21, 2004. Licensee representatives acknowledged the findings as presented. The licensee did not identify any information reviewed during the inspection as proprietary information.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

G. Palochak, Mill Shift Foreman/Alternate Radiation Safety Officer
O. Paulson, Facility Supervisor/Radiation Safety Officer

INSPECTION PROCEDURES USED

IP 83822 Radiation Protection
IP 88005 Management Organization Control
IP 88020 Operations Review
IP 88035 Radioactive Waste Management
IP 88045 Environmental Monitoring

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ALARA	as low as reasonably achievable
DAC	derived air concentrations
GMIX	Green Mountain Ion Exchange
PBL	performance-based license
RSO	radiation safety officer
SEE	safety environmental evaluations
SERP	safety and environmental review panel
SOP	Standard Operating Procedure