



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

July 5, 2001

Donna Wichers, General Manager
Pathfinder Mines Corporation
P.O. Box 831
Riverton, Wyoming 82501

SUBJECT: NRC INSPECTION REPORT 40-2259/01-01

Dear Ms. Wichers:

On June 20, 2001, the NRC completed an inspection at your former Lucky Mc Uranium Mill site in Fremont County, Wyoming. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. The inspection findings were presented to members of your staff at the conclusion of the onsite inspection. The enclosed report presents the results of that inspection. The inspection determined that you have continued to make progress in remediating the site, and activities were being conducted in a safe and effective manner and in accordance with the NRC-approved reclamation plan, the license, and NRC regulations.

No violations or deviations were identified; therefore, no response to this letter is required.

In accordance with 10 CFR 2.790 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 (PDR) **or** from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Mr. Louis Carson II at (817) 860-8221 or the undersigned at (817) 860-8186.

Sincerely,

/RA/

Charles L. Cain, Chief
Nuclear Materials Licensing Branch

Docket No.: 40-2259
License No.: SUA-672

Enclosure:
NRC Inspection Report
40-2259/01-01

Pathfinder Mines Corporation
Former Lucky Mc Uranium Mill

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No. 40-2259

License No. SUA-672

Report No. 40-2259/01-01

Licensee: Pathfinder Mines Corporation

Facility: Former Lucky Mc Uranium Mill

Location: Fremont County, Wyoming

Date: June 19-20, 2001

Inspector: Louis C. Carson II, Health Physicist
Nuclear Materials Licensing Branch
Division of Nuclear Materials Safety

Approved By: Charles L. Cain, Chief
Nuclear Materials Licensing Branch
Division of Nuclear Materials Safety

Attachment: Supplemental Information

EXECUTIVE SUMMARY

Site of Former Lucky Mc Uranium Mill NRC Inspection Report 40-2259/01-01

This inspection included a review of site status and decommissioning, management organization and controls, site radiation protection, waste management, and environmental monitoring programs.

Site Decommissioning Status

- Site activities and decommissioning programs were being conducted in accordance with the reclamation plan, the license, and applicable NRC regulations (Section 1).
- Site fences were in good condition. Site security and perimeter postings were appropriate (Section 1).

Management Organization and Controls

- The licensee's organization and management controls were found to be in accordance with requirements of the license. An appropriate staff of individuals had maintained oversight of reclamation activities (Section 2).
- Procedures were found to have been established in compliance with the license (Section 2).

Radiation Protection

- The licensee had implemented a radiation protection program that was in accordance with requirements established in 10 CFR Part 20 and the license. Employee occupational exposures were well below regulatory limits (Section 3).

Environmental Protection and Radioactive Waste Management

- Reviews of the licensee's 10 CFR 40.65 semiannual effluent reports revealed that the facility had not released any radioactive material into the environment that exceeded the limits established in 10 CFR Part 20 (Section 4).
- Environmental monitoring, radioactive waste management, and the groundwater corrective action program had been conducted in accordance with license requirements (Section 4).

Report Details

1 Site Status and Decommissioning for Uranium Mill Sites (87654)

1.1 Inspection Scope

The site status and decommissioning activities were reviewed to determine if licensee activities were being conducted in accordance with the reclamation plan, NRC regulations and the license.

1.2 Observations and Findings

a. Site Status

Pathfinder's Lucky Mc Mill operated from February 1958 until 1988. Decommissioning of the mill site began in July 1993. As part of the reclamation process, 210 acres were characterized as the affected windblown contaminated soil area. Windblown soil cleanup activities, confirmatory surveys, and soil analyses for radium-226 were completed in May 1997. Approximately 550,000 cubic yards of windblown material had been removed and placed at the toe of Tailings Pond 2A. The site has six tailings ponds, three of which (1, 2, and 2A) were used for solid waste tailings disposal, and the other three (3, 3A and 4) are used for solution disposal. A temporary pond was in use as a pump back treatment system for receiving solutions from excursion well cleanup and groundwater sweep, surface water runoff, and solution water for construction and dust control within the cells. Tailings Ponds 1 and 2 had been regraded, and the interim radon cover was in place. Tailings Pond 2A reached 90 percent consolidation in May 2001 such that regrading, interim covering installation, and radon barrier work were proceeding. The licensee had placed an interim cover on Solution Pond No. 3, and Pond Nos. 1, 2, and 3A were at various stages of having the final radon barrier installed.

Reclamation activities in progress during this inspection included placing a radon barrier on Tailings Ponds 1, 2 and 4: (1) maintenance of tailings impoundments and disposal cells, (2) digging tailings impoundment drainage channels, and (3) the continuation of a groundwater corrective action program.

b. Site Tour

A facility tour was performed to verify that site activities were being conducted in accordance with applicable regulations and the license, and to ensure that controls were adequate to protect the health and safety of workers and the public. During the inspector's tour, fences and gates were observed to be in good condition and were properly posted. The inspector determined that licensed material was secure within the site property as required by 10 CFR 20.1801 and fences were posted with radioactive material signs as required by 10 CFR 20.1902. The inspector performed a limited independent radiological survey using an NRC-issued microRoentgen meter (Serial Number 15544, calibration due date of November 29, 2001) that was calibrated to radium-226. Gamma exposure rate measurements obtained by the inspector around the site ranged from 25 to 100 microRoentgen/hour. No problem areas were identified, and no health or safety hazard was identified during the site tour. Access to the site was being controlled in accordance with License Condition (LC) 11.

1.3 Conclusions

Site decommissioning activities were reviewed and found to have been conducted in accordance with the reclamation plan, applicable license conditions, and regulatory requirements. Site fences and perimeter postings were in good condition. No health or safety hazards were identified.

2 Management Organization and Controls (88005)

2.1 Inspection Scope

The organization structure was reviewed to ensure that the licensee had maintained an effective organization with defined responsibilities and functions. The licensee's standard operating procedures (SOPs) were reviewed, and the implementation of these procedures were assessed to evaluate the effectiveness of such controls on site activities.

2.2 Observations and Findings

The licensee's functional organization dated June 1, 2001, was compared with the organization referenced in the license. The licensee's overall organization structure agreed with the conditions of the license, and no major changes had occurred in the site organization since the previous inspection. There were 7 Pathfinder employees onsite and 30 contract workers operating the construction equipment. The organizational structure has not changed since the previous inspection, with the radiation safety officer (RSO) reporting to the manager, environmental compliance and regulatory services. The licensee had maintained an appropriate staff of workers for conducting remediation activities.

License Condition 33 requires the establishment of written procedures for non-operational activities, including environmental monitoring and survey instrument

calibrations. Selected site SOPs were reviewed and determined sufficient for the program areas referenced in the license. SOPs had been reviewed annually by the RSO, as required. Licensee procedures were comprehensive and in accordance with the requirements of the license.

2.3 Conclusions

The organization structure was consistent with the license, with an appropriate staff of individuals maintaining adequate oversight of reclamation activities. Procedures had been established at the site which met the intent of the license, and were adequate for the site activities.

3 Radiation Protection (83822)

3.1 Inspection Scope

The purpose of this portion of the inspection effort was to determine if the licensee's radiation protection program was in compliance with requirements established in the license and 10 CFR Part 20.

3.2 Observations and Findings

License Condition 15 requires that the results of sampling, analyses, surveys and monitoring; the results of calibration of equipment; reports on audits and inspections; all meetings and training courses required by this license; and any subsequent reviews, investigations, and corrective actions, shall be documented. A thorough review of these records demonstrated the licensee is in compliance with the license.

License Condition 37 requires the licensee to conduct an annual ALARA audit. The most recent audits were conducted on May 16, 2000, and May 6, 2001. The audits were thorough and complete. No significant safety issues were identified.

Thermoluminescent dosimeters (TLDs) were issued to site employees and contractors on occasions. Generally, TLD radiation exposures and documentation demonstrated that workers had not exceeded 10 millirems/year when corrected for background. The licensee used a certified dosimetry vendor to provide the TLDs and to perform the analyses. Overall, personnel exposures were very low, most of which were less than background, and less than 10 percent of the 10 CFR Part 20 limits.

The inspector reviewed occupational air sample results from year 2000 through June 2001. The highest result noted was 4 percent of the derived air concentration level for natural uranium. Therefore, the inspector determined that personnel internal exposures were less than 10 percent of the 10 CFR Part 20 limits.

At the time of this inspection, there was only one remediation activity in progress that involved the handling of radioactive material. The licensee was digging drainage channels around Tailings Pond 2 that exposed tailings. The inspector noted that the

RSO had appropriately determined that a radiation work permit was not necessary for the drainage channel work. The inspector observed that the RSO was collecting periodic work area air samples from the workers that were involved in the channel digging operation. The inspector determined that this activity was being conducted safely.

License Condition 18 requires the licensee to not release contaminated material above the limits pursuant to "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials." The inspector requested to review contamination survey records from year 2000 to June 2001 of equipment and vehicles that had been released for unrestricted use were reviewed. In general, the licensee only surveyed vehicles and equipment that had been in close contact with radioactive material. Records indicated that no surveyed equipment or vehicle had been released from the site for unrestricted use with contamination in excess of the release limits.

3.3 Conclusions

The licensee had implemented a radiation protection program that met requirements of 10 CFR Part 20 and the license.

4 Radioactive Waste Management (88035) and Environmental Protection (88045)

4.1. Scope

The licensee's radioactive waste management and environmental programs were reviewed to determine compliance with applicable requirements specified in the license.

4.2 Observations and Findings

License Condition 21 requires the licensee to conduct an annual survey of land use in areas within 5 miles of the former mill and submit a report to the NRC each year. The Land Use Survey Report describes significant land use changes by private residences, non-residential structures, grazing areas, and potable water and wells. The inspector reviewed the licensee's 2000 Land Use Survey Report submitted to the NRC dated August 31, 2000. The licensee did not identify that any significant changes in land use had occurred since the last reporting period. The licensee's 2000 Land Use Survey Report was determined to be in compliance with LC 21.

License Condition 22 requires the licensee to submit semi-annual reports of radiological effluent, environmental data, and determine the annual dose equivalent to the public pursuant to 10 CFR 40.65. The inspector reviewed the licensee's 10 CFR 40.65 semi-annual reports that were submitted to the NRC on February 29, 2000, for the second half of 1999, and August 31, 2000, and February 29, 2001, for year 2000. The semi-annual reports were submitted in a timely manner and provided relevant data for the facility.

The semi-annual reports stated that the licensee had collected airborne radioactivity samples at five stations. The licensee had analyzed composite air sample filters on a quarterly basis for natural uranium, thorium-230, radium-226, lead-210, and radon-222. The measurable concentrations were significantly less than the effluent concentration limits (ECL) listed in 10 CFR Part 20, Appendix B, Table II.

Additionally, the licensee had measured direct gamma exposure rates at each of the five sample stations using environmental TLDs. The TLDs were changed out on a quarterly basis. Ambient gamma radiation levels at five TLD locations around the site for 2000 ranged from 12 millirems/quarter to 42 millirems/quarter, with background subtracted. The inspector determined that potential radiation exposure to any member of the public from licensed material would have been well below the 100 millirems/year limit.

License Condition 60 requires the licensee to implement a groundwater compliance monitoring program. Groundwater monitoring data indicated no significant trends in the groundwater quality. Groundwater from the site was not being consumed by members of the public as drinking water. The effluent and environmental monitoring data for 1999 and 2000 indicated the dose to the nearest resident did not exceed the 100 millirems/year dose limit for the public specified in 10 CFR 20.1301.

License Conditions 32 and 34 require the licensee to implement mill tailings stabilization and embankment inspection programs. The inspector reviewed embankment inspection records and conducted a tour of the mill tailings area, evaporation pond and dam areas. No embankment problems were noted.

4.3. Conclusion

The environmental monitoring program, radioactive waste management program, and management of the mill tailings area had been conducted in accordance with license requirements.

5 Exit Meeting Summary

The inspector presented the inspection results to licensee representatives at the conclusion of the inspection on June 20, 2001. The licensee representative acknowledged the findings as presented. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspector.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Hardgrove, Coordinator of Mine Environmental Affairs
C. Van Brunt, Radiation Safety Officer

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

INSPECTION PROCEDURES USED

87654	Decommissioning of Uranium Mills
88005	Management Organization and Controls
83822	Radiation Protection
88035	Radioactive Waste Management
88045	Environmental Monitoring

LIST OF ACRONYMS USED

ALARA	as low as is reasonably achievable
CFR	Code of Federal Regulations
LC	license condition
RSO	radiation safety officer
SOP	standard operating procedures
TLD	thermoluminescent dosimeter