



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005**

September 21, 2006

Mr. T. W. Hardgrove, Manager
Environmental & Regulatory Services
Pathfinder Mines Corporation
935 Pendell Blvd.
P.O. Box 730
Mills, Wyoming 82644

SUBJECT: NRC INSPECTION REPORT 040-06622/06-001

Dear Mr. Hardgrove:

This refers to the inspection conducted on August 29-30, 2006, at the Pathfinder-Shirley Basin site in Carbon County, Wyoming. The 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. Details of the inspection were presented to you at the exit briefing conducted on August 30, 2006.

As discussed with you at the exit briefing, one Unresolved Item was identified related to the shipment of empty intermodal containers from the Shirley Basin site. An Unresolved Item is a matter about which more information is required to determine whether the issue in question is an acceptable item, a deviation, a nonconformance, or a violation. The inspectors were not able to confirm who was responsible for shipping these empty containers, because this individual was obligated to comply with U.S. Department of Transportation requirements. The containers were being shipped as empty containers, but the shipments were not in compliance with Department of Transportation requirements. Details of the NRC's findings are included in Section 6.2 of the enclosed Inspection Report. The NRC will continue to review this matter and will inform you of our conclusion at a later date under separate correspondence.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document 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, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Pathfinder Mines Corp.

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Should you have any questions concerning this inspection, please contact the undersigned at (817) 860-8191 or Mr. Robert J. Evans, Senior Health Physicist, at (817) 860-8234.

Sincerely,

/RA/

D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch

Docket No.: 040-06622

License No.: SUA-442

Enclosure:

NRC Inspection Report

040-06622/06-001

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DOCUMENT NAME: s:\dnms!\fcd\!rje\60662201.wpd final r:\

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 040-06622

License No.: SUA-442

Report No.: 040-06622/06-001

Licensee: Pathfinder Mines Corporation

Facility: Former Shirley Basin Mill

Location: Carbon County, Wyoming

Dates: August 29-30, 2006

Inspector: Robert Evans, P.E., C.H.P., Senior Health Physicist
Fuel Cycle & Decommissioning Branch

Accompanied by: Linda M. Gersey, Health Physicist
Nuclear Materials Inspection Branch

Approved by: D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle & Decommissioning Branch

Attachment: Supplemental Inspection Information

EXECUTIVE SUMMARY

Pathfinder - Shirley Basin Facility NRC Inspection Report 040-06622/06-001

This inspection included a review of site status, management organization and controls, radiation protection, operator training, maintenance and surveillance testing, environmental protection, transportation and radwaste activities, and emergency preparedness. In summary, the licensee was conducting activities safely and in accordance with regulatory and license requirements, with one possible exception provided below.

Management Organization and Controls

- The staffing levels were sufficient for the work in progress. The licensee no longer conducted routine site inspections of ponds and impoundments because these areas had been reclaimed. Site procedures were established and were being maintained up-to-date (Section 1).

Radiation Protection

- The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. Occupational exposures were below the annual regulatory limit (Section 2).

Operator Training/Retraining

- Radiation protection training was provided to site workers as required by regulations and the license (Section 3).

Maintenance and Surveillance Testing

- Instruments were being calibrated as required by the license and site procedures. Survey meters in service appeared operable with up-to-date calibrations (Section 4).

Environmental Protection

- The licensee implemented the environmental and groundwater monitoring programs in accordance with the license. The licensee had not released licensed material into the environment in quantities exceeding regulatory or licensed limits. The routine groundwater and environmental monitoring program reports were submitted to the NRC as required by the license (Section 5).

Transportation of Radioactive Material and Radioactive Waste Management

- The licensee was conducting transportation and waste disposal operations in accordance with license requirements, with one possible exception. An Unresolved Item was identified regarding shipment of empty intermodal containers because it appeared that the containers were being shipped without verification of compliance with U.S. Department of Transportation requirements (Section 6).

Emergency Preparedness

- The licensee had adequate procedures, equipment, and training needed to respond to emergencies (Section 7).

Report Details

Site Status

At the time of the inspection, site reclamation activities were in progress. Final radon barrier material was being installed on the two former tailings ponds, Ponds 4 and 5. Radon barrier material was also being placed on the former solutions tailings pond West Pond 4. Pond 3 was still being used as a licensed in-situ waste disposal facility. Former evaporation Ponds 1 and 2, located within the boundary of former Pond 5, were no longer in use and were being reclaimed.

For erosion control, the license planned to install rock on the pond slopes and a vegetative cover on top of the ponds. The granite rock erosion barrier was being installed on the pond slope between Pond 4 and West Pond 4. Vegetative seeding was planned for October 2006, after completion of reclamation activities and prior to onset of winter.

The licensee still has to reclaim the areas of the former mill and ore pad. The licensee plans to install clean fill and a radon barrier on these portions of the site during the Spring of 2007. The licensee plans to complete remediation during 2007, with the exception of the waste disposal area (Pond 3). Closure and final reclamation of the waste disposal site will be conducted at a later date.

The licensee recently commenced with radon flux measurements for compliance with 10 CFR Part 40, Appendix A, Criterion 6 requirements. The licensee recently conducted sampling on portions of Pond 4 and has completed 24 of an estimated 114 sample points. The sample results for the first 24 samples were not available for review during the inspection but will be reviewed by the NRC at a later date. The licensee plans to complete radon flux testing on the tailings ponds in the next few weeks. After that, the remaining areas to be tested will be the former mill area, ore pad, and in-situ leach waste disposal area.

The remaining site structures included the office, change house/garage, wash bay, and lubrication bay. The mine shop had been disassembled since the last inspection.

1 Management Organization and Controls (88005)

1.1 Inspection Scope

The purposes of this portion of the inspection were to ensure that the licensee had established an organization to administer the technical programs and a program to perform internal reviews, self-assessments, and audits.

1.2 Observations and Findings

At the time of the inspection, site staffing consisted of four permanent employees including the manager of reclamation operations who also acted as radiation safety officer, the safety and personnel manager, and two reclamation servicemen. The reclamation servicemen conducted water sampling and heavy equipment operations. The reclamation operations manager reported directly to a general manager located in the main office.

Based on the amount of work present, the licensee discontinued the positions of technical services manager and electrician. All pertinent duties of the organization are currently assigned to the remaining staff members. The inspectors determined that the licensee had sufficient staff to fulfill the requirements of the license.

Routine site inspection requirements are specified in license application Section 4.2. The inspections included daily visual inspection of the evaporation ponds, monthly survey of evaporation pond levels, and bi-monthly monitoring of piezometer levels. The licensee discontinued the evaporation pond inspections during November 2005 when reclamation work commenced on these ponds. The licensee discontinued monitoring of piezometer levels during April 2005 because of reclamation of the tailings ponds. Finally, the remaining impoundment wells were abandoned in January 2006 because of reclamation.

License Condition 33 states that standard operating procedures shall be established. The inspectors reviewed selected procedures and confirmed that the procedures had been established. All procedures were reviewed and approved in writing by the radiation safety officer, and the radiation safety officer had performed an annual review of existing procedures.

1.3 Conclusions

The staffing levels were sufficient for the work in progress. The licensee no longer conducted routine site inspections of ponds and impoundments because these areas had been reclaimed. Site procedures were established and were being maintained up-to-date.

2 Radiation Protection (83822)

2.1 Inspection Scope

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

2.2 Observations and Findings

License Condition 36, states in part, that the annual As Low As Reasonably Achievable (ALARA) report will be submitted to the NRC for review. The most recent ALARA report was submitted to the NRC on May 25, 2006. The inspectors reviewed this report and found it to be adequate.

License Conditions 33 and 42, pertain, in part, to the bioassay program requirements. The inspectors reviewed the licensee's implementation of the bioassay program. The licensee collected one bioassay sample a year for analysis. Each bioassay sample was collected from a worker who had unloaded in-situ leach waste from an incoming shipment. All bioassay sample results were found to be less than the laboratory's detectable limit.

The inspectors reviewed the procedures and results of the licensee's quarterly area surveys and found them to be in compliance with Section 5.5.1 of the license application. All alpha wipes and beta/gamma area surveys were found to be below the respective action levels.

Since 2004, six radiation work permits were issued by the licensee to support the unloading of incoming in-situ leach wastes. In accordance with the radiation work permits, lapel air samplers were used to collect breathing zone air samples. The annual limit of intake for each worker was calculated to be less than 2-percent of the annual limit for uranium.

The inspectors reviewed the procedure and results of the quarterly surveys for vehicles that had been used in the tailings area and the equipment that had been released from the restricted area since 2004. Surveys were conducted using alpha probes and beta/gamma probes and were found to be at background levels. The surveys were conducted in accordance with Section 4.3 of the license application.

Four employees and contractors, as needed, are monitored for annual occupational exposures. Since 2004, annual occupational exposures have been assigned to workers based on personal air lapel sampling results. The licensee was using air sampling results exclusively because the thermoluminescent dosimeter results and bioassays have been below the detectable limits since 2004. As a result, the licensee discontinued the use of personnel dosimeters in 2006 as allowed by 10 CFR 20.1502(a).

The highest total effective dose equivalent exposure in 2004 was 413 millirems which was assigned to a contract worker working on the tailings pile. The highest dose in 2005 was 300 millirems which was also assigned to a contractor. The total effective dose equivalent limit, specified in 10 CFR 20.1201(a), is 5,000 millirems per year.

During the site tour, the NRC inspectors conducted radiation surveys using a Ludlum Model 2401-P survey meter (NRC Number 016297G, calibration due date of June 9, 2007). The background ambient gamma exposure rate, measured in the office, was 20 microRoentgens per hour. Ambient gamma exposure rates averaged 30-50 microRoentgens per hour in most areas of the site. The areas adjacent to the Pond 3 waste disposal area averaged 120 microRoentgens per hour. It is expected that once the Pond 3 waste disposal area is remediated, the ambient gamma exposure rates at this location will be comparable to background levels.

2.3 Conclusions

The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. Occupational exposures were below the annual regulatory limit.

3 Operator Training/Retraining (88010)

3.1 Inspection Scope

The inspection objectives were to determine whether the licensee was complying with regulations and license requirements related to the training of employees.

3.2 Observations and Findings

The inspectors reviewed the licensee's training program to determine compliance with 10 CFR 19.12, License Condition 35, and Section 5.3 of the license application. Since 2004, all initial training for contractor workers had been completed and documented. There have been no new permanent employees since before 2004; therefore, no initial training was provided for new employees. Annual refresher training and bi-monthly safety meetings were conducted in 2004 and 2005. The inspectors noted that training included written radiation safety tests. Since 2004, U.S. Department of Transportation hazardous material training has not been conducted because there have been no radioactive material shipments by the licensee.

3.3 Conclusions

Radiation protection training was provided to site workers as required by regulations and the license.

4 Maintenance and Surveillance Testing (88025)

4.1 Inspection Scope

The inspection objectives were to determine whether instrument calibrations were being conducted in accordance with license requirements and site procedures.

4.2 Observations and Findings

License Conditions 33 and 34 include requirements for annual instrument calibrations. All survey instruments are sent to a vender for annual calibrations. The alpha wipe counter is calibrated on a semi-annual basis by the licensee in accordance with the site operating procedure. All instruments in use appeared to be in good working order, up-to-date, and functional during the inspection.

4.3 Conclusions

Instruments were being calibrated as required by the license and site procedures. Survey meters in service appeared operable with up-to-date calibrations.

5 Environmental Protection (88045)

5.1 Inspection Scope

The environmental and effluent monitoring programs were reviewed to assess the effectiveness of the licensee to monitor the impacts of site activities on the local environment.

5.2 Observations and Findings

Amendment 52 to the license dated February 13, 2003, deleted the environmental monitoring program requirements with the exception of groundwater and surface water sampling. At that time, the monitoring requirements included quarterly sampling of 11 wells and collection of 8 surface water samples.

The licensee implemented a new sampling program in August 2005, concurrent with the approval of Amendment 57 to the license. Sampling under the new program commenced in October 2005. The current sampling program, specified in License Condition 47, includes sampling of 14 wells and collection of 5 surface water samples.

The licensee also discontinued the groundwater corrective action program during early November 2005, in conjunction with NRC approval of alternate concentration limits and revision of License Condition 47. The last groundwater corrective action program report was submitted to the NRC on March 1, 2005.

License Condition 22 specifies that the results of all effluent and environmental monitoring required by the license shall be reported to the NRC in semi-annual reports. The inspectors reviewed the semi-annual effluent reports for 2004-2005. Between January 2004 and August 2005, the licensee collected the required number of water samples and analyzed the samples for the chemical and radiological constituents specified in the license application, Table 5-8, "Environmental Monitoring Program."

Commencing in the fourth quarter of 2005, the licensee began sampling under the revised sampling and monitoring program. The sample results for the fourth quarter of 2005 and the first quarter of 2006 were submitted to NRC by letter dated February 28, 2006. This was the first report submitted under the new License Condition 47 requirements. Included in this report was a detailed discussion of trends.

License Condition 47.B lists the groundwater protection standards for the point-of-compliance wells. The inspectors compared the sample results for late-2005 and early-2006 to the protection standards. None of the sample results exceeded the protection standards.

The inspectors noted that the February 28, 2006, groundwater monitoring report was missing the sample results for nitrates. The licensee became aware of this error after the report had been issued. In response, the licensee included some of the missing information in the next report that was issued during the inspection. The remainder of the missing data will be presented in the next report, due to the NRC in about 6 months.

The inspectors also determined that the licensee failed to analyze two surface water samples that were collected in May 2006 for nitrates. Once the licensee recognized the error, the licensee attempted to have the samples reanalyzed but was unsuccessful because of the time sensitivity of nitrate sampling. The inspectors determined that this analysis error was not safety significant because nitrate is not one of the groundwater protection standards listed in License Condition 47.B.

In summary, the licensee had established and implemented an environmental monitoring program that was in compliance with license requirements. Recent sample results indicate licensee compliance with all protection standards. The inspectors also concluded that the 100-millirem dose limit to members of the public, as specified in 10 CFR 20.1301(a), had not been exceeded.

An annual survey of land use is required by License Condition 21. The annual surveys for 2004-2006 were reviewed during the inspection. The reports provided a review of land use within five miles of the site. The nearest residence continued to be located three miles southeast of the site. The reports note that contractors occasionally resided at the site during the work week. Since the mill has been decommissioned and buried, and the tailings material covered, the radiation exposures to contractors residing onsite for short periods of time were most likely extremely low. As a confirmation, the NRC collected ambient gamma exposure rate measurements in front of several trailers. The ambient gamma exposure rates at these trailers were noted to be at background levels.

5.3 Conclusions

The licensee implemented the environmental and groundwater monitoring programs in accordance with the license. The licensee had not released licensed material into the environment in quantities exceeding regulatory or licensed limits. The routine groundwater and environmental monitoring program reports were submitted to the NRC as required by the license.

6 Transportation of Radioactive Materials and Radioactive Waste Management (86740 and 88035)

6.1 Inspection Scope

The objectives of this portion of the inspection were to determine if transportation and waste disposal activities were being conducted in compliance with license requirements.

6.2 Observations and Findings

Security requirements are discussed in License Condition 11 and Section 5.4 of the license application. Buildings, fences, gates, and operating equipment were observed during the site tours. The access gates were functional and the fences were posted as required by 10 CFR 20.1902. The inspectors determined that licensed material was adequately secured within the site property as required by 10 CFR 20.1801 and the license application.

License Condition 46 authorizes the licensee to dispose of byproduct material generated onsite or at other licensed facilities. The licensee was actively disposing of in-situ leach wastes from four other facilities, three NRC licensees and one State of Texas licensee. Since 2004, the licensee has received about 300 shipments mostly in 30-cubic yard intermodal containers.

The inspectors reviewed recent shipping papers and site procedures, and discussed the waste disposal process with the licensee, in part, to verify compliance with U.S. Department of Transportation (DOT) requirements. One potential problem involved the return of the empty containers to the waste generators. The inspectors questioned whether the licensee was free-releasing the containers in compliance with License Condition 18 requirements, or if the licensee was shipping the containers as DOT "empty" containers as allowed by 49 CFR 173.428 requirements. In summary, the licensee stated that it was not free releasing the containers and was not responsible for shipping the containers back to the waste generators.

In accordance with its site procedures, the licensee was conducting radiological surveys of the conveyance vehicles and the exteriors of the containers, but the licensee was not surveying the interiors of the containers. As such, the licensee was not specifically free-releasing the containers. The licensee indicated that it was not responsible for shipping the containers as DOT empty containers. In addition, the licensee's site procedures did not discuss the return shipment of the empty containers.

The inspectors noted that the empty containers were not being shipped in compliance with two requirements of 49 CFR 173.428, namely, ensuring compliance with the limits on internal contamination and the labeling of the empty containers. This issue was determined to be an Unresolved Item (04006622/0601-01) because it was not clear to the inspectors who was responsible for shipment of the empty containers. The shippers would be responsible for compliance with DOT requirements for these empty containers.

6.3 Conclusions

The licensee was conducting transportation and waste disposal operations in accordance with license requirements, with one possible exception. An Unresolved Item was identified regarding shipment of empty intermodal containers because it appeared that the containers were being shipped without verification of compliance with DOT requirements.

7 Emergency Preparedness (88050)

7.1 Inspection Scope

The objective of this portion of the inspection was to determine the status of the licensee's emergency preparedness program.

7.2 Observations and Findings

The licensee no longer maintains an Emergency Response Plan, as approved by Amendment No. 52. Employees and contractors are instructed in responding to medical and/or fire emergencies. The inspectors found the program to be adequate for the type of work being conducted.

7.3 Conclusions

The licensee had adequate procedures, equipment, and training needed to respond to emergencies.

8 Exit Meeting Summary

The inspectors presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on August 30, 2006. Representatives of the licensee acknowledged the findings as presented. During the inspection, the licensee did not identify any information reviewed by the inspectors as propriety.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Hardgrove, Manager, Reclamation Operations/Radiation Safety Officer
K. Hurley, Manager, Safety/Personnel

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

040-06622/0601-01 URI Determination of who was responsible for shipping empty containers and verifying compliance with DOT requirements

Closed

None

Discussed

None

INSPECTION PROCEDURES USED

IP 83822	Radiation Protection
IP 86740	Transportation of Radioactive Material
IP 88005	Management Organization and Control
IP 88010	Operator Training/Retraining
IP 88025	Maintenance and Surveillance Testing
IP 88035	Radioactive Waste Management
IP 88045	Environmental Monitoring
IP 88050	Emergency Preparedness

LIST OF ACRONYMS USED

ALARA	As Low As Is Reasonably Achievable
DOT	U.S. Department of Transportation
IP	Inspection Procedure
NRC	Nuclear Regulatory Commission
URI	Unresolved Item