



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
1600 E. LAMAR BLVD  
ARLINGTON TX 76011-4511

September 26, 2018

John W. Cash, President  
Pathfinder Mines Corp.  
5880 Enterprise Dr.  
Suite 200  
Casper, WY 82609

SUBJECT: PATHFINDER MINES CORPORATION 040-06622 - NRC INSPECTION  
REPORT 2018-001

Dear Mr. Cash:

This letter refers to the announced, routine U.S. Nuclear Regulatory Commission's (NRC's) inspection that was conducted on August 30, 2018, at your Shirley Basin site in Carbon 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, independent radiation surveys, and interviews with personnel.

The preliminary inspection findings were presented to you at the conclusion of the onsite inspection. A final telephonic exit was conducted with you on September 11, 2018. 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 Title 10 of the *Code Federal Regulations* 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, and its enclosure, 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 you choose to provide one, should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

J. Cash

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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: 040-06622

License: SUA-442

Enclosure:

NRC Inspection Report 040-06622/2018-001

cc w/enclosure:

R. Schierman, WY Uranium Recovery Program Manager

G. Cameron, Wyoming Homeland Security

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

Docket No.: 040-06622  
License No.: SUA-442  
Report: 040-06622/2018-001  
Licensee: Pathfinder Mines Corporation  
Facility: Shirley Basin site  
Location: Carbon County, Wyoming  
Inspection Date: August 30, 2018  
Inspector: Linda M. Gersey, Health Physicist  
Fuel Cycle and Decommissioning Branch  
Division of Nuclear Materials Safety  
Approved by: Janine F. Katanic, PhD, CHP, Chief  
Fuel Cycle and Decommissioning Branch  
Division of Nuclear Materials Safety  
Attachment: Supplemental Information

Enclosure

## EXECUTIVE SUMMARY

### Pathfinder Mines Corporation NRC Inspection Report 040-06622/2018-001

This inspection was a routine, announced inspection of activities being conducted at the Shirley Basin site in Carbon County, Wyoming. In summary, the licensee was conducting site activities in accordance with license and regulatory requirements.

#### Management Organization and Controls

- The licensee conducted site activities in accordance with license and regulatory requirements. (Section 1.2)
- The licensee had sufficient staff for the work in progress. (Section 1.2)
- The annual As Low As Reasonably Achievable audit and site procedure reviews were being performed as required by the license. (Section 1.2)

#### Radiation Protection

- The licensee had implemented a radiation protection program commensurate with the limited scope of license activities, in accordance with the license and regulatory requirements. (Section 2.2)

#### Radioactive Waste Processing, Handling, Storage, and Transportation

- The licensee continued to inspect and maintain the tailings impoundment in accordance with license requirements. (Section 3.2)
- The licensee accepted 11.e(2) byproduct material for disposal in accordance with license requirements. (Section 3.2)
- The radiation surveys on outbound trucks were being conducted in accordance with the U.S. Department of Transportation and license requirements. (Section 3.2)

## Report Details

### **Site Status**

Uranium milling operations were conducted at the Shirley Basin site from 1971-1992. The mill site contains two tailings impoundments covering approximately 300 acres. A 30-acre solutions pond (Pond 3) was being used for disposal of uranium 11e.(2) byproduct material. The licensee intends to continue using the disposal area for the foreseeable future.

Reclamation of the conventional mill has been substantially completed. Other reclamation activities completed included site grading and installation of the radon clay barrier, sand layer, topsoil, and rock mulch. Portions of the site have been reseeded for regrowth of vegetation.

The remaining structures included the office, change house/garage, wash bay, and lubrication bay. The remaining site areas that must still be reclaimed include the shop yard, stockpile area, site structures, industrial pond, and local roads. Reclamation of Pond 3 and adjacent areas will occur after the licensee discontinues disposal operations.

The previous NRC inspection was conducted on September 21, 2016 (ADAMS Accession No. ML16291A562) and concluded that the licensee was conducting site activities in accordance with license and regulatory requirements. 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 11.e(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 by the licensee and no violations identified during the previous inspection.

### **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**

The license application dated December 26, 2002 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML030030172), Figure 5-1, includes a copy of the organizational structure at the Shirley Basin site. The licensee's staff included the president, vice president, and radiation safety officer (RSO). The onsite work was being conducted by a contractor, a former employee. The onsite work included receipt of waste disposal shipments, equipment release surveys, heavy equipment operations, and groundwater sampling. The president and RSO conduct oversight activities and reviews as needed to maintain compliance with the license.

License Condition (LC) 33 requires, in part, that standard operating procedures shall be established. The inspector reviewed the licensee's procedures and confirmed that, in general, procedures provided sufficient detail for the work to be performed. The RSO had performed annual reviews of existing procedures since the previous NRC inspection. The inspector concluded that the licensee had written procedures that were being reviewed annually by the RSO in accordance with LC 33.

License Condition 35 describes the requirements for the licensee's training program. The licensee is required to perform and document annual radiation safety refresher training and bi-monthly safety meetings. The inspector reviewed a selection of annual radiation safety training, bi-monthly safety meetings, and U.S. Department of Transportation (DOT) Hazardous Materials training conducted since the previous inspection. The inspector concluded that the training had been conducted in accordance with LC 35 and with the DOT training requirements for shipping radioactive material.

License Condition 36 requires, in part, that the licensee shall perform an annual As Low As Reasonably Achievable (ALARA) audit and submit the audit to the NRC for review. The NRC Project Manager is responsible to review the licensee's annual ALARA audit and communicate the NRC findings to the licensee in separate correspondence.

### 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. The annual As Low As Reasonably Achievable audit and site procedure reviews were being performed 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 license and regulatory requirements.

### 2.2 Observations and Findings

The inspector reviewed the licensee's occupational exposure monitoring program. The licensee discontinued the use of personnel dosimeters in 2008 as allowed by Title 10 of the *Code of Federal Regulations* (CFR) 20.1502(a), because external doses were consistently less than 10 percent of the annual occupational dose limits. In addition, the licensee previously discontinued collection of bioassays and air samples. The radiation protection programs were suspended because of the reduction in work being performed and the risk of inhaling or ingesting tailings material was minimal. The licensee had not issued a radiation work permit since the previous inspection.

The licensee continued to conduct equipment release and personnel surveys as required by LC 18. The primary source of potential contamination was the waste disposal area. The licensee's onsite contractor conducted release surveys of waste shipment trucks and personnel vehicles that entered the disposal area. The licensee also required all individuals who entered the waste disposal area to perform personnel surveys prior to exiting the site. The inspector reviewed the licensee's survey records for September 2016 through August 2018. The licensee's records indicated that no equipment or individual was released from the site with contamination greater than the licensee's release limits.

License Condition 15 requires, in part, that certain activities shall be documented including instrument calibrations and worker training. Details about instrument calibrations are provided in LC 34. The inspector observed that the licensee had a

sufficient number of instruments available for surveys of equipment and personnel and the licensee had maintained records of instrument calibrations on file. The licensee also had the option of supplementing the onsite survey meters with meters borrowed from a different NRC-licensed site.

During the site tour, the inspector conducted radiation surveys using a Ludlum Model 19 microRoentgens survey meter calibrated with radium-226 (NRC Number 015530, calibration due date of July 12, 2019). The background ambient gamma exposure rate measured near the office trailer was found to be approximately 26 microRoentgens per hour. The highest levels observed by the inspector was adjacent to the open disposal pit area which measured 160 microRoentgen per hour. The inspector found that the measured ambient gamma exposure rates taken for this inspection were similar to what was identified by the inspector during the previous NRC inspection.

### 2.3 Conclusions

The licensee had implemented a radiation protection program commensurate with the limited scope of license activities, in accordance with the license and regulatory requirements.

## **3 Radioactive Waste Processing, Handling, Storage, and Transportation (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 toured the site, in part, to observe the status of the buildings, fences, gates, and equipment. The access gates and fences were functional and posted as "Caution-Radioactive Materials." The closed tailings impoundment did not appear to have any erosion or degradation of the cover. The inspector determined that the licensee was maintaining the site as required by the license.

License Condition 46 authorizes the licensee to dispose of 11.e(2) byproduct material generated onsite or from other licensed facilities. The licensee was actively disposing of 11.e(2) byproduct material wastes from licensed facilities in a small tailings cell. Although no shipments were being received during the site tour, the inspector observed the licensee's waste disposal area and reviewed selected shipping records. Licensee staff described the shipping and disposal process, and the inspector compared the process to license requirements. The licensee's program included instructions for receipt of wastes, disposal of wastes, and surveys for release of the trailers and trucks. The inspector concluded that the licensee was implementing the disposal activities as required by LC 46.

The inspector reviewed representative shipping papers for inbound 11.e(2) byproduct material shipments and the radiological release records for outbound shipments. The license had accepted nine 11.e(2) byproduct material shipments for disposal in 2018 and seven shipments in 2017. The inbound shipping papers, generated by customers, met the DOT requirements. The licensee performs radiological surveys on the outbound

trucks. The inspector concluded that the licensee was implementing the shipping program in accordance with DOT requirements.

### 3.3 Conclusions

The licensee continued to inspect and maintain the tailings impoundment in accordance with license requirements. The licensee accepted 11.e(2) byproduct material for disposal in accordance with license requirements. The radiation surveys on outbound trucks were being conducted in accordance with the DOT and license requirements.

## **4 Exit Meeting Summary**

The inspector presented the preliminary inspection findings to Mr. John Cash, President, and other licensee representatives at the conclusion of the onsite inspection. A final telephonic exit was conducted with Mr. Cash on September 11, 2018. During the inspection, the licensee did not identify any information reviewed by the inspector as proprietary.

## **SUPPLEMENTAL INSPECTION INFORMATION**

### **PARTIAL LIST OF PERSONS CONTACTED**

#### Licensee

J. Cash, President

#### Wyoming Department of Environmental Quality

R. Schierman, WY Uranium Recovery Program Manager

G. Cameron, Wyoming Homeland Security

### **INSPECTION PROCEDURES (IPs) USED**

IP 83822	Radiation Protection
IP 88005	Management Organization and Controls
IP 88035	Radioactive Waste Processing, Handling, Storage, and Transportation

### **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	<i>Code of Federal Regulations</i>
DOT	U.S. Department of Transportation
IP	Inspection Procedure
LC	License Condition
NRC	U.S. Nuclear Regulatory Commission
RSO	Radiation Safety Officer

PATHFINDER MINES CORPORATION 040-06622 - NRC INSPECTION REPORT 2018-001 –  
 DATED SEPTEMBER 26, 2018

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