



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

July 27, 2018

EA-16-051

Larry Reimann, Manager
Compliance and Licensing
Power Resources, Inc.,
dba Cameco Resources
P.O. Box 1210
Glenrock, WY 82637

SUBJECT: NRC INSPECTION REPORT 040-08964/2018-001 AND NOTICE OF VIOLATION

Dear Mr. Reimann:

This letter refers to the routine U.S. Nuclear Regulatory Commission's (NRC) inspection conducted onsite from June 25-28, 2018, at Smith Ranch Highland and North Butte uranium recovery facilities, in Converse and Campbell Counties, Wyoming, respectively. The purpose of the inspection was to determine whether uranium recovery activities were being conducted safely and in conformance with the conditions of your license. A final exit meeting was conducted with you and your staff on June 28, 2018. The inspection results are documented in the enclosure to this letter.

The NRC inspection examined activities conducted under your license as they relate to public health and safety, the common defense and security, and to confirm 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, tours of the uranium recovery facilities, environmental monitoring locations, conduct of independent radiation surveys and interviews with personnel.

Based on the results of this inspection, the NRC has determined two Severity Level IV violations of NRC requirements occurred. The NRC determined the two violations are associated with: (1) a failure to post a radiation area; and (2) a failure to control access to radioactive material.

These violations were evaluated in accordance with the NRC Enforcement Policy. The current NRC Enforcement Policy is included on the NRC's Web site at (<https://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>). The violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report. In accordance with the NRC Enforcement Policy, Section 2.3.2.b., the violations are being cited in the Notice because they were identified by the NRC during the inspection and therefore, do not meet the criteria for a noncited violation.

The NRC has concluded that information regarding: (1) the reason for the violations; (2) the corrective actions taken and the results achieved; and (3) the date when full compliance was achieved was adequately addressed during the inspection and documented in the subject inspection report. Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

As part of this inspection, the NRC reviewed the status of the licensee's actions required by the Confirmatory Order EA-16-051 dated on September 30, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML16274A117). Based on the inspectors initial review as documented in Inspection Report 2017-002 (ADAMS Accession Number ML17354B228) and continued evaluation of the required actions during this inspection, the NRC concluded that the Confirmatory Order commitments have all been met. Further details are described in the enclosed inspection report.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosures, and your response, should 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 <https://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, if provided, should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

If you have any questions concerning this matter, please contact Dr. Janine F. Katanic, CHP, Chief, Fuel Cycle and Decommissioning Branch at (817) 200-1151.

Sincerely,

/RA/

Troy W. Pruett, Director
Division of Nuclear Materials Safety

Docket: 040-08964

License: SUA-1548

Enclosures:

1. Notice of Violation
2. NRC Inspection Report 040-08964/2018-001
w/Attachment: Supplemental Information

cc w/Enclosures:

Doug Pavlick, Cameco Resources, Power Resources, Inc.
Guy Cameron, WY Department of Homeland Security
Ryan Schierman, WDEQ
Robin Jones, WDEQ
Mark Rogaczewski, WDEQ

NOTICE OF VIOLATION

Power Resources, Inc.
dba Cameco Resources
Glenrock, Wyoming

Docket: 040-08964
License: SUA-1548
EA-16-051

During an NRC inspection conducted on June 25-28, 2018, two violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. Title 10 of the *Code of Federal Regulations* (CFR) 20.1902(a) requires that the licensee shall post each radiation area with a conspicuous sign or signs bearing the radiation symbol and the words, "CAUTION, RADIATION AREA."

Contrary to the above, on June 27, 2018, the licensee failed to post each radiation area with a conspicuous sign or signs bearing the radiation symbol and the words, "CAUTION, RADIATION AREA." Specifically, the inspectors identified a storage area within the selenium plant that contained radioactive material with a general radiation dose rate of 12.8 millirem per hour (mrem/hr) and a hot spot of 37.5 mrem/hr on contact, which was not conspicuously posted as a radiation area.

This is a Severity Level IV violation (Section 6.7.d)

- B. Title 10 CFR 20.1801 requires that the licensee shall secure from unauthorized removal or access licensed materials that are stored in controlled or unrestricted areas.

Contrary to the above, on June 26, 2018, and June 27, 2018, the licensee failed to secure from unauthorized removal or access licensed material that was stored in controlled or unrestricted areas. Specifically, on June 26, 2018, a conex storage container that was in an unrestricted area was posted as "May Contain Radioactive Material" and was not locked. On June 27, 2018, an entry door was discovered opened into the selenium plant, a controlled area, which contained radioactive material.

This is a Severity Level IV violation. (Section 6.7.d)

The NRC has concluded that the information regarding the reasons for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved, were adequately addressed during the inspection and documented in the subject inspection report. However, if the description in the inspection report does not accurately reflect your corrective actions or your position, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201. In that case, if you choose to respond, clearly mark your response as "Reply to Notice of Violation" and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region IV, 1600 East Lamar Blvd, Arlington, TX 76011-4511, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or in the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <https://www.nrc.gov/reading-rm/adams.html>.

Therefore, to the extent possible, the response should not include any personal, privacy proprietary or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support request for withholding confidential commercial or financial information.

In accordance with 10 CFR 19.11, you may be required to post this Notice within 2 working days of receipt.

Dated this 27th day of July 2018.

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-08964

License: SUA-1548

Report: 040-08964/2018-001

Licensee: Power Resources Inc., dba Cameco Resources

Location of Inspection: Smith Ranch Highland and North Butte Satellite
Converse and Campbell Counties, Wyoming

Inspection Dates: June 25 – 28, 2018

Inspectors: Bernadette Baca, Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Martha Poston-Brown, 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 Inspection Information

EXECUTIVE SUMMARY

Power Resources Inc., In-Situ Recovery Facility
NRC Inspection Report 040-08964/2018-001

The U.S. Nuclear Regulatory Commission (NRC) performed a routine health and safety inspection from June 25 – 28, 2018, which included observations of site activities, independent radiation surveys, review of records, and interviews with site personnel. In summary, the licensee was conducting operations in accordance with regulatory and license requirements described below.

Management Organization and Controls

The organizational structure and staffing levels maintained by the licensee during the inspection period met the requirements specified in the license and were sufficient for the current activities being performed under the license. The licensee's safety and environmental reviews were performed in accordance with the license requirements. The licensee conducted audits and inspections as required by regulatory requirements and the license conditions. The licensee submitted additional protocol information as required by the regulation. (Section 1.2)

In-Situ Leach Facilities

The licensee conducted in-situ recovery and operations in accordance with the license and regulatory requirements. The licensee was maintaining financial assurance in accordance with license requirements. Two violations of radiological control requirements were identified by the inspectors during site tours and were related to: (1) a failure to post a radiation area; and (2) a failure to control access to radioactive material. The licensee took prompt steps to correct the violations. (Section 2.2)

Radiation Protection

The licensee implemented a radiation protection program which met the requirements of Title 10 *Code of Federal Regulations* (CFR) Part 20 and the license. Occupational doses were less than regulatory limits. (Section 3.2).

Effluent Control and Environmental Protection and Maintaining Effluents from Materials Facilities As Low As Reasonably Achievable (ALARA)

The licensee conducted environmental monitoring in accordance with license requirements and reported the results in semi-annual reports to the NRC. The annual dose to members of the public remained below regulatory limits. The licensee was documenting spills and conducting excursion sampling as specified in the license. (Section 4.2)

Inspection of Transportation Activities and Radioactive Waste Processing, Handling and Storage

The shipment of yellowcake and resin and the management, storage, transportation, and disposal of byproduct material and 11.e(2) wastes were conducted in accordance with the license and regulatory requirements. (Section 5.2)

Follow-up of Confirmatory Order

Actions associated with the confirmatory order issued September 27, 2016 (ADAMS Accession Number. ML16274A117) were reviewed and it was determined the required actions have been met. (Section 6.2)

Report Details

Site Status

At the time of the inspection, Power Resources, Inc. had stopped extracting uranium using the in-situ recovery process. Limited uranium processing and drying operations were in progress at the Smith Ranch Highland Central Processing Plant (CPP). Two satellite facilities (Sat-2 and SR-1) and one remote satellite facility (North Butte) were in service supporting restoration activities. Two satellite facilities (Sat-3 and SR-2) were placed in care and maintenance status with restoration fluids routed to Sat-2 and SR-1. The majority of the activities at the site were associated with supporting mine unit restoration activities.

Uranium recovery operations were on standby at the renovated Highland CPP. The Reynolds Ranch Satellite has received Wyoming Department of Environmental Quality (WDEQ) approval and the inspectors understand a decision to proceed with construction depends on market conditions. The Highland and Ruth Satellites are not in operation at this time, although the licensee inspected these facilities once per quarter. The licensee indicated new mine unit production and development are not a top priority due to current economic conditions. The licensee recently relocated staff from the Sat-3 and SR-2 facilities and were monitoring the facilities via video feed and twice-daily (once per shift) walkdowns by Operations personnel.

1 Management Organization and Controls (Inspection Procedure (IP) 88005)

1.1 Inspection Scope

Ensure the licensee has established an organization to administer the technical programs and to perform internal reviews, self-assessments and audits.

1.2 Observations and Findings

a. Organizational Structure

The inspectors reviewed the licensee's organizational structure for the Smith Ranch Highland and the North Butte Satellite facilities. At the time of the inspection, the Smith Ranch Highland facility operation had approximately 55 full-time employees, which was a decrease of 17 employees since the November 2017 inspection. The North Butte Satellite had nine full-time employees, no reduction in employees. The reduction in Cameco's staffing levels was the result of a decrease in the yellowcake production and the licensee's decision to stop additional mine unit development at Smith Ranch Highland and North Butte. Additional staff reductions are anticipated as the facility continues to reduce production activities.

Since the previous inspection, the organizational structure has changed. The organizational changes were reviewed under the Safety and Environmental Review Panel (SERP) process. The current organizational chart reflected the movement of individuals from one job position to another and a redistribution of duties and responsibilities to address attrition and the reduction in force. The inspectors determined that the reassignment of duties and responsibilities did not impact the functions of operations and radiation protection.

During the previous inspection, it was noted the Radiation Safety Officer (RSO) left the facility on March 16, 2017, and an interim RSO was approved in the 03/17-04 SERP dated March 15, 2017. The interim RSO divides her time between this site and the Cameco Crow Butte site. As of the date of this inspection, the interim RSO continued to implement the required programs and was supported by two Health Physics Technicians (HPT), two HPT-in-training, and one technician performing various environmental sampling for the radiation protection program. Based on the current operating levels, the inspectors determined that the licensee had sufficient staff to implement the radiation protection, groundwater monitoring and environmental programs. The licensee was actively training one of the HPTs to be appointed as the next RSO and allow the interim RSO to return to full-time support of Cameco's Crow Butte facility.

b. Safety and Environmental Review Panel

NRC License SUA-1548, Amendment No. 24, dated February 29, 2016, License Condition 9.4 specifies that the licensee establish a SERP process to evaluate if program changes, tests or experiments require an NRC license amendment prior to implementation. The inspectors reviewed the following SERP evaluations completed since the November 2017 inspection:

18-03 SERP	Remote Operation of Satellite Facilities
18-04 SERP	Organizational Chart and Chapter 9 Changes

In accordance with License Condition 9.4, the licensee is expected to submit a description of each change, including a summary of each safety and environmental evaluation to the NRC in a future annual report. The inspectors concluded the licensee correctly implemented the performance-based license, and the evaluations did not require prior NRC approval.

c. Audits and Inspections

The inspectors reviewed the audits and inspections generated by the licensee since the previous inspection, to determine whether the activities were performed in accordance with the requirements of License Condition 9.7 and Regulatory Guide 8.31, "Information Relevant To Ensuring That Occupational Radiation Exposures At Uranium Recovery Facilities Will Be As Low As Is Reasonably Achievable." The licensee was conducting and documenting a daily walk-through of all work and storage areas of the facility to ensure good radiation practices were being followed. The RSO, RSO-designees along with trained and qualified operators performed and documented the daily walk-throughs. Site procedures allowed trained and qualified operators to perform the daily walk-throughs on days when radiation safety staff were not available, such as weekends and holidays. The RSO or an RSO designee reviewed the walk-through documentation upon return to the facility. Based on a review of the daily walk-throughs conducted since the previous inspection, the inspectors determined that the licensee was adequately performing the required reviews. In addition, the weekly and monthly reviews performed by the RSO/RSO-designee were conducted at the required frequencies.

In accordance with the requirements of 10 CFR 20.1101(c), the licensee conducted its annual radiation protection program audit for calendar year 2017. This audit was conducted by two outside consultants on March 20-21, 2018. No regulatory issues were identified.

d. Additional Protocols

The inspectors verified the licensee had provided the NRC with the appropriate 2017 documentation to comply with 10 CFR 75.11, which is related to the Agreement between the United States of America and the International Atomic Energy Agency for the Application of Safeguards in the US. The licensee provided four of the necessary forms providing contact information, the capacity of yellowcake production, the actual annual yellowcake production, and the quantity of yellowcake on hand. The inspectors concluded the reports were accurate, complete, and consistent for the calendar year 2017.

1.3 Conclusions

The organizational structure and staffing levels maintained by the licensee during the inspection period met the requirements specified in the license and were sufficient for the current activities being performed under the license. The licensee's safety and environmental reviews were performed in accordance with the license requirements. The licensee conducted audits and inspections as required by regulatory requirements and the license conditions. The licensee submitted additional protocol information as required by the regulation.

2 In-Situ Leach (ISL) Facilities (IP 89001)

2.1 Inspection Scope

Determine if in-situ recovery activities were conducted in accordance with regulatory requirements and the license.

2.2 Observation and Findings

a. Uranium Recovery

As of February 6, 2018, uranium recovery production at Smith Ranch Highland and North Butte ceased. The licensee was no longer injecting lixiviant and was operating in restoration mode. The wellfield flows were being processed to remove residual uranium and treated for final disposal. Prior to ceasing production, the monthly average for November and December 2017 and January 2018, was approximately 1,475 gallons per minute (gpm), 1,654 gpm, and 1,558 gpm respectively, which was below the License Condition 10.1.1 limit of an average monthly flow rate of 20,000 gpm. The few days of production during February 2018 averaged 1,214 gpm.

b. Site Tours

The inspectors conducted a site tour to observe in-situ uranium recovery activities at the Smith Ranch Highland CPP, focusing on plant status and condition. The inspectors conducted tours to observe licensed activities at the following header houses (HH): HH1-2, HH1-9, and HH2-9. In addition, the inspectors observed licensed activities at the remote satellite North Butte and its evaporation ponds, deep disposal wells SRHUP-6 and NB-BY-2, SR-1, SR-2, Sat-2, the selenium plant, and the secured condition of Sat-3. The inspectors determined operators were conducting operations in accordance with the site procedures.

The inspectors found all entrance areas to the facility and wellfields were posted with the words, "Any Area Within This Facility May Contain Radioactive Material", as required by License Condition 9.8.

The inspectors conducted independent gamma exposure rate surveys in the central processing plant, remote satellite facility, selenium plant, deep disposal wells, header houses and wellfields. Surveys were conducted using a Ludlum Model 19 microRoentgen rate meter ($\mu\text{R/hr}$) (serial number 36543 and calibration due date of October 26, 2018, calibrated to radium-226) and a Thermo RadEye Model 4250474 rate meter (Serial Number 0370 and calibration due date of October 24, 2018). The inspectors noted the as-found gamma exposure rates were consistent with the licensee's measurements. The inspectors identified a violation of 10 CFR 20.1902(a) for a failure to post a radiation area. During the inspectors' tour of the selenium plant, four barium sulfate sediment IP-2 packages were identified as having an average radiation rate of 12.8 millirem per hour (mrem/hr) with a hot spot of 37.5 mrem/hr on contact. The storage area where the IP-2 packages were located was not conspicuously posted as a radiation area. The failure to post the radiation area was a violation of 10 CFR 20.1902(a). The licensee took immediate corrective action and posted the selenium plant as a radiation area. The inspectors verified the selenium plant was correctly posted as a radiation area, which closed this violation. (VIO-04008964/2018001-01)

The inspectors also identified two occurrences of a violation of 10 CFR 20.1801 for a failure to secure from unauthorized removal or access licensed material stored in controlled or unrestricted areas. Specifically at the North Butte facility on July 26, 2018, the inspectors identified an unlocked conex storage container posted as "May Contain Radioactive Material." The inspectors reviewed the conex storage container contents and observed pumps and other contaminated equipment that was used in the wellfield. The unlocked storage container of radioactive material was a violation of 10 CFR 20.801. The site supervisor promptly locked the storage container and discussed the requirement to keep the container locked (secure) to prevent unauthorized access to the material during the following shift meetings. The second example was identified on June 27, 2018, while touring the selenium plant. The inspectors observed an entry door into the plant that was not firmly closed. A closer investigation revealed the auto-shut mechanism on the door was broken. This door opened in close proximity to the area where the IP-2 packages were stored, with an average radiation rate of 12.5 mrem/hr. The inspectors utilized logs and facility walk down documentation to determine the door was damaged due to high winds sometime between June 24, 2018, and June 26, 2018. The licensee was able to secure the door during the tour and a work order was promptly generated to fix the auto-shut mechanism.

The two occurrences of a failure to secure radioactive material in storage is a violation in accordance with 10 CFR 20.1801. While onsite, the inspectors verified the conex container was locked, staff were retrained regarding securing radioactive material from unauthorized use, and the selenium door was secured with a work order generated to repair the closure mechanism. These prompt actions by the licensee closed the violation. (VIO-4008964/2018001-02)

c. Financial Assurance

In accordance with License Condition 9.5, the licensee submitted its most recent annual financial assurance updates for the main Smith Ranch facility on June 21, 2017. On March 14, 2018, NRC staff determined all submitted financial assurance updates were acceptable (ADAMS Accession Number ML18058B030).

2.3 Conclusion

The licensee conducted in-situ recovery and operations in accordance with the license and regulatory requirements. The licensee was maintaining financial assurance in accordance with license requirements. Two violations of radiological control requirements were identified by the inspectors during site tours and were related to: (1) a failure to post a radiation area; and (2) a failure to control access to radioactive material. The licensee took prompt steps to correct the violations.

3 Radiation Protection (IP 83822)

3.1 Inspection Scope

Determine whether the licensee's radiation protection program was conducted in compliance with the license and 10 CFR Part 20 requirements.

3.2 Observations and Findings

a. Occupational Exposures

The inspectors reviewed the licensee's occupational exposure records for the last quarter of 2017 and the first quarter of 2018. Approximately 50 employees were monitored for external exposure using optically stimulated luminescence (OSL) dosimeters, which were exchanged on a quarterly basis. Occupationally monitored employees included plant and wellfield operators, health physics staff, laboratory staff and maintenance workers. The highest deep dose equivalent exposure for calendar year 2017 was 356 millirem (3.56 milliSievert). This dose was assigned to a CPP operator. The highest dose assigned for first quarter 2018 was 124 mrem (1.24 milliSievert), also to a CPP operator. All doses were below the limits established in 10 CFR 20.1201, "Occupational dose limits for adults." The inspectors reviewed the bioassay results and determined there were no results above the action level for investigation (15 micrograms per liter). In addition, the licensee utilized blank and spike bioassay samples to verify the accuracy of the analytical process.

The licensee conducted air sampling, in part, for assessment of internal exposures. The inspectors reviewed the licensee's radon-222 air sampling records and the uranium particulate and worker breathing zone results for the first three quarters of 2017. The inspectors identified internal exposures were below the limits established in 10 CFR 20.1201. The inspectors confirmed the licensee had conducted air sampling at the required intervals, in accordance with the licensee's procedures. The appropriate exposures were calculated and recorded for each employee.

b. Radiation Work Permits

Since the previous inspection, two radiation work permits were issued for the replacement of the selenium plant clarifier flocculent tank and general selenium plant clean up. The inspectors reviewed the permits and concluded that the permits contained the necessary air sampling and protective equipment requirements for the work being performed.

c. Free release surveys

Free release surveys since the previous inspection from Smith Ranch Highland facility, the CPP, and North Butte were reviewed and found to be performed in accordance with License Condition 9.6.

d. Radiation Safety Instrumentation

The inspectors reviewed the licensee's operability, calibration and maintenance records for survey instruments in accordance with License Condition 10.4. Instruments reviewed were found to be in calibration. The licensee used an offsite vendor to perform annual calibration for radiation safety instrumentation. Based on the survey meters examined by the inspectors, they were determined to be in calibration. The inspectors observed licensee personnel using survey meters appropriately when exiting restricted areas.

e. Respiratory Protection

The inspectors examined the respiratory protection equipment and reviewed the licensee's respiratory protection procedures, medical testing and fit testing results. The inspectors determined that the licensee's respiratory protection program met the license and 10 CFR 20 Subpart H requirements.

3.3 Conclusions

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

4 Effluent Control and Environmental Protection and Maintaining Effluents from Material Facilities ALARA (IP 88045 and IP 87102)

4.1 Inspection Scope

Determine if the environmental and effluent monitoring programs are adequate to monitor the impacts of site activities on the local environment.

4.2 Observations and Findings

a. Environmental Monitoring

The semi-annual reports were submitted timely by the licensee in accordance with the requirements of 10 CFR 40.65. The inspectors reviewed the data and the facility's procedures to ensure environmental samples and other data collected was accurate and representative.

The inspectors toured the following groundwater and surface water sampling locations: Sage Creek, SW-2, SW-5, SW-6, GW-4, GW-5, GW-6, GW-13, GW-14, GW-16, and FM-12. The inspectors also inspected two of the three air sampling stations (AS-1 and AS-2) and the following environmental stations: "David's Well" environmental station, Man Camp environmental station and NB-11 and NB-12 at North Butte. Air Samplers were in calibration and running. The passive radon track-etch detector and OSL dosimetry were in place at the observed monitoring stations.

b. Dose to Members of the Public

The licensee conducted an annual audit of the radiation protection program in accordance with 10 CFR 20.1101(c). Part of the audit for calendar year 2017 included an analysis of public dose based on uranium particulate monitoring and radon monitoring for the assignment of committed effective dose equivalent (CEDE) and optically stimulated luminescence (OSL) monitoring for deep dose equivalent (DDE). Public dose was determined to be a CEDE of 50.04 mrem/year (50 mrem/year based on radon monitoring, 0.04 mrem/year based on uranium particulate monitoring) and 2.6 mrem per year DDE based on OSL monitoring, for total effective dose equivalent of 52.64 mrem.

c. Wellfield and Excursion Monitoring

The inspectors examined the licensee's reportable and non-reportable spill reports generated since the last inspection pursuant to the requirements of License Condition 12.1. According to licensee records, one spill occurred on June 1, 2018, resulting in a total of 308 gallons of process water spilled with no fluids recovered. Spills of greater than 400 gallons are required to be reported to WDEQ. The licensee appropriately documented the spill and retained the documentation in the decommissioning records as required under 10 CFR 40.36(f).

License Condition 10.1.3 requires mechanical integrity tests on each injection and production well before wells are utilized and on wells that have been serviced using a downhole drill bit or under-reaming. The inspectors observed the licensee had provided the integrity testing, plugging, and abandonment results to the State of Wyoming per the Underground Injection Control program.

License Condition 11.5 requires, in part, that the licensee monitor groundwater at the designated excursion monitoring wells at least twice a month. The inspectors reviewed records for two excursions at the North Butte wellfield that occurred in 2017. An excursion of wells NB2M-059 and NB2M-060 was identified by the licensee on November 17, 2017 (ADAMS Accession Number ML17345A154). The licensee adjusted wellfield flows and was able to recover both excursions by January 23, 2018 (ADAMS Accession Number ML17361A082 and ML18046A077). Another excursion was identified on May 3, 2018 (ADAMS Accession Number ML18137A207) for well NBM-30. As of June 6, 2018, the last time the well was sampled, the well remained in excursion status. The licensee continued to make necessary wellfield adjustments and perform required monthly sampling and monitoring of the well until the well is no longer in excursion status.

4.3 Conclusions

The licensee conducted environmental monitoring in accordance with license requirements and reported the results in semi-annual reports to the NRC. The annual dose to members of the public remained below regulatory limits. The licensee was documenting spills and conducting excursion sampling as specified in the license.

5 Inspection of Transportation Activities and Radioactive Waste Processing, Handling and Storage (IP 86740 and IP 88035)

5.1 Inspection Scope

Determine if storage and disposal activities were conducted in compliance with regulatory and license requirements.

5.2 Observations and Findings

a. Inspection of Transportation Activities

The inspectors reviewed transportation activities performed since the last inspection. During this inspection period, the licensee made one yellowcake, twenty-seven resin, six samples, and twelve 11.e(2) byproduct waste shipments. The inspectors reviewed the licensee's procedures and shipping records associated with these shipments. No shipment of pond sediment occurred during the inspection period.

The licensee's transportation program implemented previous corrective actions that included: (1) a single point of contact for all shipping paperwork; (2) spreadsheet used for characterizing and classifying shipments; and (3) use of Material Safety Data Sheet to accurately describe the physical and chemical composition of the shipments. The inspector reviewed shipping packages generated during the inspection review period for accuracy and compliance to U.S. Department of Transportation regulations regarding radionuclide content, activity, classification, characterization, and labeling. No issues or concerns were identified with the shipping documentation.

b. Inspection of Byproduct Waste Storage

The inspectors observed that all 11.e(2) byproduct material waste storage bins were staged within restricted areas with surrounding fences and locked entries.

The NRC staff reviewed the licensee's agreements for off-site disposal of solid 11.e(2) byproduct material. The NRC staff determined the licensee's disposal agreements were consistent with the requirements of License Condition 9.6

c. Wastewater Treatment Activities

The licensee is authorized to process liquid effluent through reverse osmosis units and evaporation ponds, store liquids in storage tanks, or dispose of liquids to a deep disposal well (DDW). In addition, the licensee is authorized to release liquid effluent by land application after constituents are processed through the selenium plant in order to reduce the effluent to below regulated levels.

The license currently has nine DDWs installed and authorized for use. The licensee provided the inspectors with the 2017 fourth quarter and 2018 first and second quarter WDEQ waste disposal data for each of the operating DDWs. Following is a summary of the data results for the volume and injection pressures.

<u>VOLUME</u>	<u>Morton 1-20</u>	<u>Vollman 33-27</u>	<u>SRHUP-6</u>	<u>SRHUP-7</u>
Avg Monthly Volume (gallons)	2,205,432	2,153,900	1,048,105	409,335
Max Daily Volume (gallons)	88,684	91602	40899	20,204
Daily Volume Limit (gallons)	151,200	151,200	151,200	151,200

<u>VOLUME</u>	<u>SRHUP-9</u>	<u>SRHUP-10</u>	<u>DDW-1</u>	<u>Reynolds</u>	<u>NB-BY-2</u>
Avg Monthly Volume (gallons)	596,313	414,350	2,709,725	127,256	2,212,303
Max Daily Volume (gallons)	32,248	17,111	103,957	17,035	156,829
Daily Volume Limit (gallons)	151,200	151,200	216,006	211,680	162,004

<u>INJECTION PRESSURE</u>	<u>Morton 1-20</u>	<u>Vollman 33-27</u>	<u>SRHUP-6</u>	<u>SRHUP-7</u>
Avg Pressure (psig)	951	946	1,055	692
Max Daily Pressure (psig)	1,021	1,032	1,117	714
Max Pressure Limit (psig)	1,050	1,093	1,116	720

psig = pounds per square inch gauge

<u>INJECTION PRESSURE</u>	<u>SRHUP-9</u>	<u>SRHUP-10</u>	<u>DDW-1</u>	<u>Reynolds</u>	<u>NB-BY-2</u>
Avg Pressure (psig)	763	909	1,298	555	801
Max Daily Pressure (psig)	898	984	1,559	670	1,332
Max Pressure Limit (psig)	916	1,000	1,578	677	1,389

The licensee identified on November 19, 2017, SRHUP-6 had a transient pressure spike of 1116.8 pounds per square inch gauge (psig) when the injection pump shut down. The licensee investigated the 0.8 psig overage and determined the spike did not adversely affect the formation or the well. This information is required to be included in the WDEQ permit reports.

The inspectors observed selected DDWs, evaporation ponds, waste processing circuits, and the selenium plant and reviewed records to determine the licensee was adequately processing and disposing of wastes through the authorized methods and in accordance with regulatory and license conditions.

5.3 Conclusions

The shipment of yellowcake and resin and the management, storage, transportation, and disposal of byproduct material and 11.e(2) wastes were conducted in accordance with the license and regulatory requirements.

6 **Follow-up of Confirmatory Order (IP 92703)**

6.1 Inspection Scope

Ascertain whether the actions taken by the licensee met the requirements of the Confirmatory Order EA-16-051 dated September 30, 2016 (ADAMS Accession Number ML16274A117).

6.2 Observations and Findings

On September 30, 2016, the NRC issued a Confirmatory Order (CO) to Power Resources, Inc., as a result of an agreement reached during an alternative dispute resolution mediation session (ADAMS Accession Number ML16274A117). The licensee committed to the following corrective actions to address the CO: (1) Conduct an annual meeting with key management, RSO, facility managers and other appropriate technical staff to discuss and review performance indicators, license changes, preparations for major changes in operations, health physics issues, procedural compliance indicators, operational safety issues, and the radiation protection program; (2) Incorporate the requirements of 10 CFR 40.9, "Completeness and Accuracy of Information," and 10 CFR 40.10, "Deliberate Misconduct," into initial and annual refresher training conducted for all employees involved in NRC-regulated activities; (3) Ensure a qualified member of the health physics staff be available at any of its facilities when equipment is being released from a radiologically controlled area to an unrestricted area, and; (4) Notify the NRC in writing at intervals not to exceed 12 months on the status of the CO until the terms are completed.

The NRC reviewed the licensee's actions during a previous inspection and the results are documented in Inspection Report 2017-002 (ADAMS Accession Number ML17354B228). The inspectors reviewed Section V, Item A, Item B, and Item C of the CO and determined the actions were partially met. The licensee met Section V, Item D of the CO with the submission of a written status response on September 27, 2017 (ADAMS Accession Number ML17278A661).

In this inspection, the inspectors confirmed the licensee was conducting an annual management review of performance indicators as part of its International Organization for Standardization (ISO) 1401 certification and that the licensee incorporated the elements (the performance indicators, license changes, operations changes, health physics issues and procedure compliance) from Section V, Item A into its existing program. The inspectors confirmed that issues identified during the calendar year 2016 management review had been addressed during the calendar year 2017 management review. In addition, it was determined that the licensee implemented a comprehensive discussion of all the required topics committed to in the CO during the annual meetings.

The inspectors confirmed that the licensee conducted the training of personnel regarding complete and accurate information and individual accountability as required by Section V, Item B of the CO. The inspectors reviewed the licensee's training for a discussion of an individual's responsibility to report non-compliances to management and the requirements to provide complete and accurate information to the NRC as agreed to in the CO. The licensee added this training to the annual site safety training which was conducted between February 6, 2018 and March 12, 2018. This training expanded the discussion regarding complete and accurate information to include the difference between deliberate misconduct and careless disregard and provided examples of each type of willfulness classification. The inspectors reviewed the training attendance records and confirmed that all site personnel involved in NRC-regulated activities had completed the revised training course.

The inspectors confirmed the licensee revised its free release survey procedure to require a qualified HPT/RSO designee to review and approve all surveys for release of materials and/or equipment from a radiologically controlled area to an unrestricted area:

WYO-RPP-04, "Health Physics Manual – Contamination Control Procedures," Revision 23. During the November 2017 inspection and this inspection, the inspectors completed a comprehensive review of survey records for the free-release of equipment and materials and concluded that a qualified HPT performed the survey and release of equipment and materials in accordance with Section V Item C of the CO. The inspectors concluded that the licensee had implemented the commitments in the CO.

In accordance with Section V Item D of the CO, the licensee provided written status responses to the CO on May 17, 2018 (ADAMS Accession Number ML18165A462). The inspectors determined the licensee's actions and documentation had satisfied all the commitments made in the CO.

6.3 Conclusion

Actions associated with the confirmatory order issued September 27, 2016 (ADAMS Accession Number ML16274A117) were reviewed and it was determined that the required actions have been met.

7 **Exit Meeting Summary**

The NRC inspectors presented the final inspection results to the licensee's representatives at the conclusion of the onsite inspection on June 28, 2018. During the inspection, the licensee did not identify any information reviewed by the NRC as proprietary, which was included in this report.

SUPPLEMENTAL INSPECTION INFORMATION

Partial List Of Persons Contacted

Licensee Personnel

Doug Pavlick, General Manager US Operations
Ty Spence, Wellfield Services Foreman
Larry Reimann, Licensing and Compliance Manager
Beth Frye, Health Physics Technician
Mindy Griffiths, Health Physics Technician
Jessica Eads, Health Physics Technician in Training
Tatum Hlavacek, Safety Health Environment Quality (SHEQ) Specialist
Michael Bashore, Chief Hydrologist

Inspection Procedures Used

IP83822	Radiation Protection
IP86740	Inspection of Transportation Activities
IP87102	Maintaining Effluents from Materials Facilities ALARA
IP88005	Management Organization and Controls
IP88045	Effluent Control and Environmental Protection
IP88035	Radioactive Waste Processing, Handling, Storage and Transportation
IP89001	In-situ Leach Facilities
IP92703	Follow-up of Confirmatory Action Letters or Orders

Items Opened, Closed and Discussed

Opened

04008964/2018001-01	VIO	Failure to post a radiation area (10 CFR 20.1902(a))
04008964/2018001-02	VIO	Failure to secure or limit access to radioactive material in storage (10 CFR 20.1801)

Closed

04008964/2018001-01	VIO	Failure to post a radiation area (10 CFR 20.1902(a))
04008964/2018001-02	VIO	Failure to secure or limit access to radioactive material in storage (10 CFR 20.1801)

Discussed

None

List of Acronyms

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As is Reasonably Achievable
CFR	<i>Code of Federal Regulations</i>
CO	Confirmatory Order
CPP	Central Processing Plant
CY	Calendar Year
DDW	Deep Disposal Well
ESH	Environmental Safety and Health
gpm	gallons per minute
HH	Header House
HPT	Health Physics Technician
IP	NRC Inspection Procedure
IP-2	Industrial Package Type 2
μ R/hr	microRoentgen per hour
mrem/hr	millirem per hour
NRC	U.S. Nuclear Regulatory Commission
ORC	Occupational Review Committee
OSL	Optically Stimulated Luminescence
psig	pounds per square inch gauge
RSO	Radiation Safety Officer
SERP	Safety and Environmental Review Panel
VIO	Violation
WDEQ	Wyoming Department of Environmental Quality

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 SWoods, OE
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 MDapas, NMSS
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 BVonTill, NMSS

ADAMS ACCESSION NUMBER: ML18199A299

<input checked="" type="checkbox"/> SUNSI Review By: MRP	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
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NAME	MPoston	BBaca	JKatanic	MVasquez
SIGNATURE	/RA/	/RA/	/RA by RSBrowder Acting for/	/RA/
DATE	7/25/18	7/25/18	7/26/18	7/27/18

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