UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

May 10, 2011

John McCarthy, Radiation Safety Officer
Power Resources, Inc.
P.O. Box 1210
Glenrock, Wyoming 82637

SUBJECT: NRC INSPECTION REPORT 040-08964/11-001

Dear Mr. McCarthy:

This refers to the announced, routine inspection conducted on February 14-17, 2011, at the Smith Ranch uranium recovery facility in Converse 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, and interviews with personnel. The preliminary inspection findings were discussed with you at the exit briefing conducted at the conclusion of the onsite inspection. The final exit briefing was conducted with you telephonically on April 13, 2011. No violations were identified, and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, 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's 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.

Should you have any questions concerning this inspection, please contact Ms. Linda M. Gersey at 817-860-8299 or the undersigned at 817-860-8197.

Sincerely,

/RA/

Jack E. Whitten, Chief
Nuclear Materials Safety Branch B

Docket: 040-08964
License: SUA-1548

Enclosure:
NRC Inspection Report 040-08964/11-001

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	☐ Non-publicly Available		☐ Sensitive	

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LMGersey;dlf	RJEvans	JLSaxton	JPClements	JEWhitten
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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	040-08964
License:	SUA-1548
Report:	040-08964/11-001
Licensee:	Power Resources, Inc.
Facility:	Smith Ranch In-Situ Recovery Facility
Location:	Converse County, Wyoming
Dates:	February 14-17, 2011
Lead Inspector:	Linda M. Gersey, Health Physicist Nuclear Materials Safety Branch B
Inspector:	Robert J. Evans, Senior Health Physicist Repository and Spent Fuel Safety Branch
Accompanied by:	John L. Saxton, Hydrogeologist Decommissioning and Uranium Recovery Licensing Directorate Division of Waste Management and Environmental Protection Office of Federal and State Materials and Environmental Management Programs John P. Clements, Health Physicist Decommissioning and Uranium Recovery Licensing Directorate Division of Waste Management and Environmental Protection Office of Federal and State Materials and Environmental Management Programs
Approved by:	Jack E. Whitten, Chief Nuclear Materials Safety Branch B
Attachment:	Supplemental Inspection Information

ENCLOSURE

EXECUTIVE SUMMARY

Power Resources, Inc. Smith Ranch In-Situ Recovery Facility
NRC Inspection Report 040-08964/11-001

This inspection included a review of site status, site tours, management organization and controls, site operations, radiation protection, environmental protection, transportation, and radioactive waste management.

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 work in progress (Section 1.2).

- The licensee completed the safety and environmental review panel evaluations in accordance with license requirements (Section 1.2).

In-Situ Leach Facilities

- The licensee was conducting plant site operations in accordance with license and regulatory requirements (Section 2.2).

- Radiologically restricted areas were properly posted, plant parameters were within required operating intervals, and plant security was adequate (Section 2.2).

Radiation Protection

- The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license (Section 3.2).

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

- The licensee implemented environmental, groundwater, and surface water monitoring programs in accordance with the license (Section 4.2).

- Licensed operations did not exceed the annual dose limits to members of the public (Section 4.2).

Inspection of Transportation Activities and Radioactive Waste Management

- The licensee ‘s response to the previous violation related to failure to follow DOT requirements while transporting licensed material was inadequate and remains open (Section 5.2).

- The licensee collected wastewater samples as required by the license application, and the sample results indicated that the fluid met the criteria for disposal by land application (Section 5.2).

- The new Selenium Plant was operating in accordance with license criteria (Section 5.2).

Report Details

Site Status

At the time of the inspection, Power Resources, Inc. was mining uranium using the in-situ recovery process. Four satellite facilities (Sat-2, Sat-3, SR-1, and SR-2) were in service and supporting twelve operating wellfields. Eight wellfields were in active restoration. Uranium processing and drying operations were in progress at the Smith Ranch central processing plant (CPP). Uranium recovery operations were on standby at the Highland CPP.

The licensee was conducting limited work at its other licensed satellite facilities. In order to initiate operations at the Reynolds Ranch satellite, the licensee was in the process of obtaining approval for its plan of operations from the Bureau of Land Management. The licensee has installed the monitor well ring in Mine Unit 27 at Reynolds Ranch. The licensee's Gas Hills, Ruth, and North Butte satellites are not in operation at this time.

1 Management Organization and Controls (88005)

1.1 Inspection Scope

Ensure that the licensee had 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 licensee's organizational structure is illustrated in Figure 9-1 of the February 2008 license amendment that was approved by the NRC on August 18, 2008. During calendar year (CY) 2010, the licensee evaluated two changes to the organizational structure through the Safety and Environmental Review Panel (SERP) process. In January 2010, as recorded in ORC/SERP 2/10-2, the licensee approved a change in reporting of the Environmental, Health and Safety Manager from the General Manager to the Director, Compliance and Licensing. In October 2010, as recorded in ORC/SERP 10/10-2, the licensee split the Safety, Health, and Environmental and Quality Program into two groups at the division level. The radiation safety programs and regulatory affairs were separated and now report directly to the President. The inspectors determined that the licensee's current organizational structure was in agreement with the structure specified in Figure 9-1.

At the time of the inspection, the licensee had 154 full time employees. The licensee's radiation safety staff consisted of one Radiation Safety Officer (RSO), one qualified health physics technician (HPT), and two HPTs in training. There was one vacant position for an HPT. The inspectors determined that the licensee had sufficient staff to implement the radiation protection, groundwater monitoring, and environmental programs at its current operating level.

b. Safety and Environmental Review Panel

The inspectors reviewed various SERP reviews that were conducted by the licensee during the inspection period. The inspectors reviewed SERP 5/10-1, related to having

alternate personnel perform the RSO and Facility Foreman weekly inspections, as required by License Condition 9.7, and outlined in NRC Regulatory Guide 8.31. The SERP evaluation did not discuss who qualifies as an alternate person to perform the inspections. The RSO stated that only an HPT, who was trained to perform such duties, would perform the weekly inspection if the RSO was not available. The licensee agreed to update the SERP evaluation to clarify the qualification requirements for alternate personnel to perform these routine inspections.

The inspectors reviewed ORC/SERP 07/10-1, related to having the Selenium Plant become the single point of radium removal in the wastewater circuit, resulting in only one point for compliance. The old radium sampling areas in Satellites 2 and 3 are no longer appropriate because all radium is removed in the Selenium Plant. The inspectors concluded that the licensee had implemented the SERP determination in accordance with the performance-based license conditions.

In March 2009, the licensee began the SERP evaluation of adding a new selenium and barium/radium removal circuits. The licensee placed these two new circuits into service in the new Selenium Plant during 2010. The licensee installed the selenium removal circuit, in part, to comply with a State of Wyoming limit for selenium in the wastewater. The licensee installed the barium chloride treatment/radium removal circuit, in part, to meet the radium treatment sampling limits specified in the license application. Additional details about these two circuits are provided in Section 5 of this inspection report.

The SERP (ORC/SERP 0-031009-1) approved the selenium removal circuit during September 2009. The SERP (ORC/SERP 0-102109-1) subsequently approved the barium chloride treatment/radium removal circuit during November 2009. The licensee operated the equipment using draft procedures as supplemented by a job hazard analysis. The SERP formally approved the operating instructions during December 2010. The inspectors reviewed the SERP package, interviewed plant staff, and conducted a walkdown of the plant equipment. The inspectors concluded that the new circuits were improvements that exceeded the licensee's commitments as specified in the license application. In addition, the licensee implemented health and safety controls at the Selenium Plant that included building ventilation, radiological postings, and building security features. In summary, the inspectors concluded that the licensee had implemented these SERP determinations in accordance with the performance-based license conditions.

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 work in progress. The licensee completed the SERP evaluations in accordance with license requirements.

2 In-Situ Leach Facilities (89001)

2.1 Inspection Scope

Determine if in-situ recovery activities were being conducted by the licensee in accordance with the NRC's regulatory requirements and the license.

2.2 Observation and Findings

In response to Unresolved Item 040-08964/0801-03, identified by NRC staff during the March 2008 inspection, the licensee committed to install four monitoring wells (MW-1S, MW-2S, MW-3S, and MW-4S) near Purge Storage Reservoir 2 (PSR2) to determine whether or not PSR2 was leaking into the surrounding groundwater. The licensee's commitment was documented in a letter to the NRC dated June 22, 2009. The wells have been installed and sampling of the wells was conducted on September 11, 2009, March 23, 2010, and June 30, 2010. The groundwater samples were analyzed for HCO_3, chloride, sulfate, barium, selenium, uranium, and radium-226 concentrations by a contract laboratory. The draft groundwater analytical data were reviewed by the inspectors along with an associated draft plan for additional studies, which was prepared by a contractor for the licensee. In brief, the draft plan includes the installation of additional wells to determine background water quality. The licensee stated to the inspectors that they plan to perform the additional studies, including the installation of additional wells. The inspectors noted that this unresolved item needs to be closed by the next inspection and will defer a decision pending review of data from the additional studies.

At the time of this inspection, operations were being performed at Mine Units H, I, J/J-extension, K, 2, 3/3-extension,9/9-extension, and 15/15A and restoration activities were in progress at Mine Units C, D/D-extension, 1, E, F, and 4/4A. The biorestoration trial at Mine Unit C had mixed results, and the mine unit was returned to conventional groundwater restoration treatment. Wells in several older mine units, Mine Units D and E, had to be replaced prior to performing full-scale restoration activities, which delayed implementation of the restoration activities. One factor that hampered restoration activities in the past was the limited disposal capacity. With the recent permitting of additional disposal wells, the licensee has sufficient disposal capacity; however, the infrastructure to connect all mine units to all disposal wells is lacking and the limited system may hamper restoration activities at several mine units in the future. The licensee has plans to install piping in the near future such that all mine units are connected to all disposal wells.

The Wyoming Department of Environmental Quality (WDEQ) and NRC approved restoration activities at Mine Unit A. The groundwater restoration completion report for Mine Unit B was submitted to the NRC by letter dated June 26, 2009. NRC staff completed its acceptance review and determined that the report was insufficient. The licensee was notified by letter dated September 29, 2009, that the report was considered unacceptable for the purposes of conducting a detailed technical review. One issue regarding the Mine Unit B restoration was the existing long-term excursion status of one monitoring well. During the review period for this inspection, the licensee reported that the well in question failed an MIT test and was replaced. The levels of the excursion indicator parameters detected in the groundwater at the replacement well permitted the removal of this well from excursion status. The licensee intends to re-evaluate the geochemistry of the mine units and historical data, including a request for application of alternate control limits for the mine unit. The licensee committed to having "a path forward" by the next inspection.

During the September 2009 inspection, one violation (VIO 040-08964/0902-01) of NRC requirements was identified related to the licensee's failure to decommission mine units within 24 months and failure to request an alternate decommissioning schedule for mine

units that required greater than 24 months to decommission. The licensee responded to this violation by stating that a schedule is pending WDEQ review under a Consent Order between the licensee and the WDEQ for decommissioning, initiating groundwater restoration activities in one mine unit, and initiating infrastructure improvements at additional mine units and that this schedule will be submitted as an alternate schedule to NRC pending WDEQ approval. During the review period, WDEQ staff issued comments to the licensee on the proposed schedule. NRC staff will continue to evaluate the licensee's restoration activities during future inspections, and this violation remains open.

License Condition 10.1.1 states that commercial plant operations shall not exceed an average monthly flow rate of 20,000 gallons per minute (gpm), exclusive of restoration flow. The inspectors observed the flow rates at the CPP and four operating satellites. The total plant operations flow rate was about 15,000 gpm during the site tours. The actual flow rate remained below the licensed limit. In addition, the licensee was conducting groundwater restoration at the CPP and Satellites 1 and SR-1. At the time of the inspection, the total groundwater restoration flow was approximately 1100-1200 gpm.

The inspectors also conducted a review of the licensee's control of its disposal pathways for plant wastewater. The sources of wastewater include the production bleed stream, plant wash-down water, sump water, laboratory wastes, and reverse osmosis system water. At the CPP, the sources of wastewater also include the yellowcake thickener overflow and filter press wash water. As described in the license application, the licensee is authorized to dispose of wastewater through land application or by deep-disposal well injection.

At the time of the inspection, the licensee had five deep disposal wells that were installed and available for use. The licensee had installed three additional wells that were not in operation for various reasons. Two additional wells were permitted for operation but had not been installed. In addition to the deep disposal wells, the licensee was authorized to dispose of wastewater via land application. The licensee operated one of two land application irrigators for two months during 2010. Section 5.2.b of this inspection report provides additional details about the disposal of wastewater via land application.

The inspectors conducted site tours to observe in-situ recovery operations in progress. Areas toured included the CPP, the four operating satellites, the Selenium Plant, selected mine units, and the area used for storage of old equipment (referred to as the "boneyard"). The inspectors reviewed the status of plant equipment, radiation protection postings, and site security. Plant parameters were within required operating intervals, plant equipment appeared to be in good condition, radiological postings were in place, and site security was adequate. In summary, the licensee was maintaining control of the areas and equipment in accordance with license and regulatory requirements.

The inspectors conducted independent radiological surveys of the gamma exposure rates present in the plant. The surveys were conducted using a Ludlum Model 19 microRoentgen survey meter (NRC 015544, calibration due date of 04/06/11) and a Ludlum Model 2401-EC2 survey meter (NRC 016294G, calibration due date of 01/03/12). The inspectors did not identify any areas that had not already been identified and posted as radiation areas by the licensee.

2.3 Conclusions

The licensee was conducting plant site operations in accordance with license and regulatory requirements. Radiologically restricted areas were properly posted, plant parameters were within required operating intervals, and plant security was adequate.

3 Radiation Protection (83822)

3.1 Inspection Scope

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

3.2 Observations and Findings

a. Occupational Exposures

The inspectors reviewed the licensee's dose assessment records for July through December 2010. Approximately 60 employees were monitored for external exposures using thermoluminescent dosimeters that were exchanged on a quarterly basis. Occupationally monitored employees included CPP operators, satellite/restoration operators, health physics staff, and maintenance workers. The highest deep dose equivalent for July through December 2010 was 194 millirems (1.94 milliSieverts).

The licensee conducted air sampling, in part, for assessment of internal exposures. The inspectors reviewed the licensee's radon-222 air sampling records for the July 2010 through January 2011 timeframe and the uranium particulate and worker breathing zone sample results for the July 2010 through February 2011 timeframe. The inspectors confirmed that the licensee had conducted sampling at the required intervals, and the sample results were included in the worker's total effective dose equivalent exposure records.

The licensee collected bioassay samples to assess the potential for intakes of uranium. The inspectors reviewed the bioassay program to verify compliance with License Conditions 11.2 and 11.3. Since the August 2010 inspection, no bioassay sample result exceeded the action level of 15 micrograms per liter, the action level specified in Chapter 9 of the licensee's approved license application for implementation of corrective actions.

b. Radiation Protection Surveys

Section 9.8 of the license application requires, in part, that the licensee perform quarterly gamma radiation surveys in specific locations throughout the satellite buildings and CPP areas to verify radiation area postings and to assess external radiation conditions. At the time of the inspection, the inspectors determined that the licensee was conducting the gamma radiation surveys on a weekly frequency in all areas, except the header houses. The header houses were surveyed on a monthly basis. The inspectors observed an HPT performing gamma surveys inside the SR-2 facility. It appeared that he technician had an adequate understanding of the instrument operation and of the radiation levels being measured.

Alpha contamination surveys were conducted by the licensee on a weekly frequency in clean areas of the site and in the process areas, although Section 9.13 of the license application authorizes the licensee to conduct monthly process area surveys. The inspectors observed an HPT performing alpha contamination surveys inside the SR-2 facility. It appeared that the technician had an adequate understanding of the instrument operation and of the contamination levels being measured.

In the Selenium Plant, the licensee sampled for radon progeny, removable contamination, and air particulates. The licensee also measured surface alpha contamination and ambient gamma radiation levels. During early 2011, the licensee conducted a special review of the radiological conditions of the new Selenium Plant. The purpose of this review was to ascertain whether the new plant unnecessarily contributed to occupational exposures. The licensee concluded that operation of the equipment in the Selenium Plant did not significantly contribute to employee exposures. In addition, the licensee reviewed the results of a September 2010 smoke test to determine airflow direction. The smoke test indicated that air rose toward the roof as designed.

c. Training

The licensee is required to conduct training in accordance with License Condition 9.7 and license application Section 9.6 for its contractors and new employees and provide annual refresher training for current employees. The inspectors reviewed radiation safety training records for two current employees and several new contractors hired since the previous inspection. All training activities and records were in accordance with the requirements of the license.

d. Instrumentation

The inspectors reviewed the licensee's operability, calibration, and maintenance records for portable radiation survey instruments. On an annual basis, the licensee sends all portable survey instruments to an outside vendor for calibration. The inspectors reviewed instrument calibration certificates for several portable survey instruments and found the calibration certificates to be adequate and the instruments currently calibrated. The inspectors observed survey meters being used by the licensee's employees when exiting restricted areas. The survey instruments examined by the inspectors were found to be in calibration and were being used appropriately by the licensee's staff.

e. Respiratory Protection

The inspectors reviewed the licensee's respiratory protection program to ensure compliance with 10 CFR 20.1703. Respiratory protection training and fit test records were reviewed, and they appeared to be consistent with written procedures. Through discussions with Health Physics and Operations staff, the inspectors determined that respirator users are individually fitted for respirators and that respiratory equipment is operationally tested prior to each use.

3.3 Conclusions

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

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

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

License Condition 12.2 states, in part, that the results of effluent and environmental monitoring shall be reported to the NRC in accordance with the provisions of 10 CFR 40.65. The inspectors reviewed the licensee's Semiannual Effluent and Environmental Monitoring Report for July 1 through December 31, 2010, dated February 28, 2011 (referred to in this report as "semiannual report"). The licensee's environmental monitoring program consisted of air particulate, radon, ambient gamma radiation, groundwater, and surface water. As part of the licensee's wastewater land application permit from the WDEQ, soil and vegetation, irrigation fluid and radium treatment system samples, soil water samples at the irrigation areas, and monitor wells at PSR1 and PSR2 are sampled.

Continuous air particulate sampling was conducted at three locations: a background station, a downwind boundary station, and a nearest downwind resident station. The licensee sampled the air for uranium, radium-226, and lead-210 particulate concentrations. The licensee also elected to voluntarily sample for thorium-230 concentrations in the air. None of the sample results for the third and fourth quarters of 2010 exceeded the respective effluent concentration limits specified in 10 CFR Part 20, Appendix B.

The licensee also sampled for radon-222 concentrations in the air at the three sample stations. The inspectors reviewed the radon-222 airborne concentration results for the third and fourth quarters of 2009. All sample results taken by the licensee were less than the effluent concentration limit specified in 10 CFR Part 20, Appendix B.

The licensee measured ambient gamma radiation levels at the three sample stations using thermoluminescent dosimeters. For the third and fourth quarters of 2010, all sample results were comparable to background levels.

The licensee reported the annual dose to the public from operations for CY 2010, as required by 10 CFR 20.1301, to be less than 100 millirems (1 milliSieverts). The licensee, using 10 CFR 20.1302(b)(2), demonstrated that the annual average radioactive effluent concentrations did not exceed the values in 10 CFR Part 20, Appendix B, Table 2 limits and that the external dose to an individual continuously present in an unrestricted area would not exceed 2 millirem (0.02 milliSieverts) in one hour and 50 millirem (0.5 milliSieverts) in a year. The licensee calculated the total effective dose equivalent to a member of the public in CY 2010 to be 35.2 millirem (0.352 milliSieverts).

b. Groundwater and Surface Water Environmental Monitoring

The inspectors reviewed the surface water, groundwater, and effluent monitoring data for the Highland and the Smith Ranch sites in the semiannual report, which was completed after the on-site inspection. Based on the inspector's review, the licensee conducted all groundwater and surface water environmental monitoring as required by License Condition 11.6.

The surface and groundwater monitoring program consists of quarterly sampling of groundwater and surface water for natural uranium and radium-226 in nearby wells and surface water sites used for livestock or for domestic water services which are located within
1 kilometer of the operating wellfields. The sampling consists of 10 surface water (stock) ponds, 7 windmills (groundwater), and 11 wells (groundwater). The semiannual report provided sample data for 3 out of 20 possible surface water samples for the 2010 third and fourth quarter sampling events. Seventeen samples were not collected because the stock ponds were dry or frozen. For the groundwater locations, the semiannual report provided sample data for 11 out of 36 possible groundwater samples. Twenty-five samples were not collected because the windmill or well was not operating at the time of sample collection. All reported values for natural uranium and radium-226 were within the respective effluent concentration limits. The inspectors concluded that the licensee had implemented the groundwater and surface water monitoring programs in accordance with Chapter 5 of the license application and License Condition 11.6.

The semiannual report also included results from Satellites 2 and 3 radium filter press effluents. The monitoring results show that the radium-226 concentration exceeded the 10 CFR Part 20, Appendix B, effluent concentration limit of 6.00E-8 µCi/ml at Satellite 3 during January of 2010. The five subsequent sample results were less than the radium-226 concentration limit. The inspectors noted that the Appendix B values are based on an annual average concentration, rather than a one-time exceedance. The remainder of the 2010 sample results will be reviewed during a future inspection to ensure that the annual average concentration is not exceed.

Water levels are measured on a quarterly basis and groundwater samples are collected on a semiannual basis from the two shallow groundwater monitoring wells located at PSR2. The required monitoring data were obtained and reported in the semiannual report, and the sample results continue to be trended by the licensee for a study to resolve Unresolved Item 040-08964/0801-03 (see Section 2.2 of this report).

During the review period, Irrigator 1 did not operate during the monitoring period. In the semiannual report, the licensee included monthly grab samples of the fluid through Irrigator 2 during the months that it operated (July and August). The radium concentration in one sample exceeded the estimated limit in the original license application but was below the effluent limit in Table 2 of 10 CFR Part 20, Appendix B.

Soil and vegetation samples of the irrigation areas were not collected during this reporting period. The 2010 soil and vegetation sampling will be conducted during August 2010, and these results will be included in the next semiannual report.

c. Wellfield and Excursion Monitoring

License Condition 12.1 requires, in part, that the licensee maintain documentation on spills of source materials, 11e.(2) byproduct materials, or process chemicals. The licensee is also required to report any wellfield excursions, spills, or pond leaks involving source materials, 11e.(2) byproduct materials, or process chemicals that may have an impact on the environment.

The licensee reported five spills that had taken place since the last inspection. All five spills resulted from mechanical failures. The total volume of fluids released ranged from 137 to 960 gallons. These spills were logged by the licensee and one spill (on September 22, 2010) was required to be reported to the NRC per License Condition 12.1 as the spill met the threshold for reporting a spill to the WDEQ (i.e., spill volume exceeded 420 gallons). The uranium concentration of the reported spill was 1.5 ppm U_3O_8. The licensee reported the spill as required.

License Condition 11.5 requires, in part, that the licensee monitor groundwater at the designated monitoring wells twice a month. The licensee has approximately 1,300 groundwater monitoring wells that are sampled during a typical month using six field sampling personnel. The inspectors reviewed the groundwater sampling records and concluded that groundwater monitoring was being conducted as required by the license.

During the reporting period, the licensee reported four wells had been on excursion status during part or all of the reporting period. Wells CM-33 and DM-3 were on excursion status throughout the reporting period. These wells have been on excursion status for an extended period of time. Well BM-42, which had been on excursion status prior to the reporting period, failed an MIT and was replaced by well BM-42a. Well BM-42a was removed from excursion status during the reporting period. Well CM-15, which had a history of prior excursion status, was on excursion status during most of September 2010. The inspectors determined that the licensee had performed the requisite monitoring for the excursion monitoring program and submitted the required reports within a timely manner pursuant to License Condition 11.5.

License Condition 10.1.6 requires, in part, that the licensee maintain 4 feet of freeboard for the purge storage reservoirs. Purge Storage Reservoir 1 had not been in service since the previous inspection. Purge Storage Reservoir 2 was in service during the reporting period. The inspectors reviewed the on-site log reports for the PSR2 weekly inspections. The inspectors concluded that the minimum 4-foot freeboard had been maintained since the previous inspection.

License Condition 10.1.6 requires, in part, that the licensee maintain 3 feet of freeboard for the storage ponds. Two storage ponds (east and west) were utilized by the licensee since the previous inspection. The inspectors reviewed the on-site logs for the daily inspections of the ponds. Based on the licensee's records, the minimum 3-foot freeboard was maintained for both ponds since the previous inspection.

The inspectors reviewed the daily visual inspection log records for the storage ponds which were required to be maintained by the licensee by License Condition 11.4. The log records included inspections of the leak detection systems for the ponds. The records indicate that no suspected leaks have occurred during the reporting period.

License Condition 10.1.3 requires, in part, that an MIT be performed prior to an injection or recovery well being brought into service and every 5 years thereafter. Based on the review of the database maintained by the licensee, the inspectors concluded that the licensee was performing the MIT tests in accordance with license requirements. An estimated 20 of 509 wells tested failed their MIT test or were taken out of service during the reporting period. Of the 20 wells, 9 wells failed the 5-year anniversary MIT test, whereas 13 wells were removed from service due to problems, such as pump failure with melted casing. The MIT failures were attributed to old "screw-fitting" method to join well casings (at Mine Units C, D, E, F, and part of H) or use of 4.5-inch diameter wells (Mine Units 12 and K). These methods of well construction are no longer in use. The inspectors concluded that the licensee has performed MIT tests as required pursuant to License Condition 10.1.3.

4.3 Conclusions

The licensee implemented environmental, groundwater, and surface water monitoring programs in accordance with the license. Licensed operations did not exceed the annual dose limits to members of the public.

5 Inspection of Transportation of Activities and Radioactive Waste Management (86740 and 88035)

5.1 Inspection Scope

Determine if transportation and disposal activities conducted by the licensee were conducted in compliance with regulatory requirements.

5.2 Observations and Findings

a. Inspection of Transportation Activities

The inspectors reviewed the licensee's transportation records maintained since the August 2010 inspection. Trucks with tanker trailers are routinely utilized by the licensee to transport resin to and from the satellite buildings and the CPP. The inspectors reviewed selected resin tanker trailer shipping papers and found them to include the pertinent information required by Department of Transportation (DOT) regulations.

License Condition 9.6 requires, in part, that the licensee possess a waste disposal agreement to dispose of 11e.(2) byproduct material at an offsite location. In 2010, the licensee generated a waste disposal contract with a new vendor, and the NRC approved the new contract in a letter dated August 17, 2010. Since the previous inspection, five waste disposal shipments were made to the newly contracted waste disposal site. Material sent for disposal consisted of 11e.(2) contaminated equipment, such as filters, pipes, and pumps. The inspectors reviewed all of the shipping records for the most recent disposal shipments and found them to be complete.

The licensee also ships licensed yellowcake material off site. In CY 2010, a total of 49 shipments of yellowcake, loaded in 55-gallon drums, were shipped to an out-of-state processing facility. Beginning in January 2011, the licensee began shipping yellowcake to Canada for processing. The licensee has an NRC export license, held by a broker,

that authorizes yellowcake to be brought into Canada for conversion into uranium hexafluoride and then returned to the U.S. for future processing. The inspectors reviewed a selected sample of shipping records and found them to be complete and in accordance with DOT and NRC regulations.

During the August 2010 inspection, one violation (VIO 040-08964/1002-01), was identified related to the failure of the licensee to comply with appropriate DOT regulations while transporting licensed material over public highways. Specifically, the licensee shipped water transfer filters and trash classified as 11e.(2) waste from Satellites SR-2 and SR-1 to the CPP without performing radiation or contamination surveys to ensure compliance with DOT requirements. In addition, the license transported radium-226 contaminated filters to an analytical laboratory without verifying compliance with DOT radiation or contamination limits. These examples are violations of 10 CFR 71.5(a), which requires that a licensee who transports licensed material outside of the site of usage comply with the applicable requirements of the regulations appropriate to the mode of transport of the DOT in 49 CFR Parts 170 through 189.

The licensee responded to the violation in letter dated February 23, 2011. NRC staff found the response did not adequately address the violation and requested additional information. Specifically, the licensee did not state how they will transport over public highways water filters and trash classified as 11e.(2) byproduct material from Satellites SR-2 and SR-1 to the CPP using the appropriate DOT requirements. The inspectors will review the response when it is made available.

b. Review of Wastewater Treatment Activities

The license application authorizes the licensee to dispose of wastewater at both the Satellites 1 and 2 land application facilities. Prior to discharge to the purge storage reservoirs, the plant wastewater is processed to remove the excess uranium, radium-226, and selenium concentrations in the water. After treatment, the wastewater is sampled to ensure that it meets the criteria specified in the license application as well as State of Wyoming requirements for land application.

The licensee elected to construct a new barium chloride treatment/radium removal system and a selenium treatment system in the new Selenium Plant. Wastewater from Satellites 2 and 3 are routed to these systems for processing prior to land application. The inspectors toured the Selenium Plant to review the operations of the two new treatment systems. The inspectors also reviewed recent sample results to determine if these two systems were effectively processing the water by removing the radium and selenium prior to land application.

The licensee's SERP approved the new selenium circuit during September 2009, while the SERP approved the barium treatment/radium removal circuit during November 2009. The two systems were placed into service during early 2010. After these two systems were placed into service, the licensee removed the existing barium treatment systems from service in Satellites 2 and 3. The inspectors compared the as-built systems to the operating procedure instructions and design drawings. The inspectors concluded that the system was being operated in accordance with procedure requirements, and the systems were constructed in accordance with design drawings. In addition, the operations staff was knowledgeable about the operability requirements. At the time of the inspection, the licensee had not completed the installation of the groundwater

restoration equipment in the Selenium Plant. The restoration circuit will be installed at a later date.

License application Tables 5-8 and 5-9 stipulate that the treated wastewater will be sampled monthly for radium-226 concentrations. The inspectors confirmed that the treated wastewater was being sampled monthly. The sample results for 2010 were reviewed during the inspection. Only one sample result exceeded the effluent concentration limit. With a limit of 60 picocuries of radium-226 per liter of water (pCi/L), the January 2010 monthly sample was 65 pCi/L. However, the radium limit is an annual average, and the average of all monthly samples (less than 15 pCi/L) was about one-fourth of the annual average.

During 2010, the licensee disposed of wastewater at the Satellite No. 2 land application facility, but not the Satellite No. 1 land application facility. The licensee operated Irrigator No. 2 during July-August 2010. The licensee disposed of 57 acre-feet of fluid via land application during 2010. In accordance with Tables 5-8 and 5-9 of the license application, the licensee samples the irrigation fluid monthly for natural uranium, radium-226, selenium, and other chemical constituents. The licensee's sample results indicate that the natural uranium and radium-226 concentrations were less than the NRC's effluent concentration limits, and the selenium concentrations were less than the State of Wyoming's limit.

5.3 Conclusions

The licensee 's response to the previous violation related to failure to follow DOT requirements while transporting licensed material was inadequate and remains open. The licensee collected wastewater samples as required by the license application, and the sample results indicated that the fluid met the criteria for disposal by land application. The new Selenium Plant was operating in accordance with license criteria.

6 Exit Meeting Summary

The NRC inspectors presented the preliminary inspection results to the licensee's representatives at the conclusion of the onsite inspection on February 17, 2011. The final exit briefing was conducted by telephone on April 13, 2011. During the inspection, the licensee did not identify any information reviewed by the NRC inspectors as proprietary that was included in the report.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Cannon, General Manager
T. Young, V.P., Operations
J. Leftwich, Director, Radiation Safety and Licensing
J. McCarthy, Radiation Safety Officer
D. Mooney, Manager, Mine Operations
A. Faunce, Assistant Radiation Safety Officer

INSPECTION PROCEDURES USED

IP 88005	Management Organization and Controls
IP 89001	In-Situ Leach Facilities
IP 83822	Radiation Protection
IP 88045	Effluent Control and Environmental Protection
IP 87102	Maintaining Effluents from Materials Facilities ALARA
IP 86740	Inspection of Transportation Activities
IP 88035	Radioactive Waste Management

ITEMS OPENED, CLOSED, AND DISCUSSED

Open

none

Closed

None

Discussed

040-08964/1002-01	VIO	Failure to perform radiation and contamination surveys on packages used for shipment of licensed material.
040-08964/0902-01	VIO	Failure to decommission wellfields within 24 months and failure to request an alternate decommissioning schedule
040-08964/0801-03	URI	Verify whether PSR2 was leaking into the groundwater

LIST OF ACRONYMS USED

ALARA	as low as reasonably achievable
CPP	central processing plant
CFR	*Code of Federal Regulations*
CY	calendar year
DOT	U.S. Department of Transportation
gpm	gallons per minute
HPT	health physics technician
IP	NRC Inspection Procedures
MIT	mechanical integrity test
µCi/ml	microcuries per milliliter
ORC	Operational Review Committee
PSR	purge storage reservoir
SERP	Safety and Environmental Review Panel
URI	unresolved item
VIO	violation
WDEQ	Wyoming Department of Environmental Quality