



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

March 30, 2012

Arlene Faunce, Radiation Safety Officer
Power Resources, Inc.
P.O. Box 1210
Glenrock, Wyoming 82637

SUBJECT: NRC INSPECTION REPORT 040-08964/12-001

Dear Ms. Faunce:

This refers to the unannounced, routine inspection conducted from February 27 through March 1, 2012, 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 March 9, 2012.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, if you choose to make 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 817-200-1299 or the undersigned at 817-200-1191.

Sincerely,

/RA/

D. Blair Spitzberg, PhD, Chief
Repository and Spent Fuel Safety Branch

Docket: 040-08964
License: SUA-1548

Enclosure:

1. NRC Inspection Report 040-08964/11-002

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

Docket: 040-08964

License: SUA-1548

Report: 040-08964/12-001

Licensee: Power Resources, Inc.

Facility: Smith Ranch In-Situ Recovery Facility

Location: Converse County, Wyoming

Dates: February 27 – March 1, 2012

Inspector: Linda M. Gersey, Health Physicist
Repository and Spent Fuel Safety Branch

Accompanied by: Elise Striz, PhD, Hydrogeologist
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Approved by: D. Blair Spitzberg, PhD, Chief
Repository and Spent Fuel Safety Branch

Attachment: Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Power Resources, Inc. Smith Ranch In-Situ Recovery Facility NRC Inspection Report 040-08964/12-001

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 was adequately supervising the contractors working on the Highland Central Processing Plant (Section 1.2).
- The licensee's safety and environmental review evaluations were performed 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).
- An Unresolved Item (040-08964/0801-03) related to the purge storage reservoir 2 and its impact on groundwater was closed (Section 2.2a).
- Radiologically restricted areas were properly posted, plant parameters were within required operating intervals, and plant security met license requirements (Section 2.2d).

Radiation Protection

- The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license (Section 3.2).
- The doses to employees were below occupational dose limits (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).
- One violation was closed related to the failure of the licensee to provide a 30 day spill report to the NRC (Section 4.2c).
- One violation was closed related to failure to have an alarm that allows an operator to initiate corrective action (Section 4.2c).

- One unresolved item (URI 040-08964/1102-03) remains open related to a spill in Mine Unit 15, pending the licensee's results for determining if any contamination of an aquifer has occurred (Section 4.2c).
- The 2011 annual dose to members of the public was below regulatory limits (Section 4.2a).

Inspection of Transportation Activities and Radioactive Waste Management

- One violation was closed related to the storage of byproduct storage bins containing contaminated materials in an unrestricted area (Section 5.2b).
- The licensee was transporting radioactive material in accordance with NRC and Department of Transportation requirements (Section 5.2a).
- The licensee had 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 5.2c).

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 11 operating mine units (MUs). Seven MUs 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 and the licensee was in the process of renovating this portion of the facility.

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 from the Wyoming Department of Environmental Quality (WDEQ). The Gas Hills, Ruth, and North Butte satellites are not in operation at this time. The licensee, however, has installed a meteorological station at North Butte, drilled 400 delineation holes, designed the first wellfield, and is planning the first pumping test for the fourth quarter 2012. The licensee has installed a meteorological station at Gas Hills and drilled two test holes to evaluate the target formation for the proposed deep disposal well. No activity is occurring or planned at the Ruth Satellite. Both the Gas Hills and Ruth Satellite are inspected once per quarter by the licensee.

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. The inspectors reviewed the licensee's current organizational structure and found that it was in agreement with the structure specified in Figure 9-1. At the time of the inspection, the licensee had 149 full time employees. The licensee had 7 vacancies, several of which were related to restoration duties. The licensee's radiation safety staff consisted of one Radiation Safety Officer (RSO), one qualified health physics technician (HPT), and three HPTs in training. The licensee uses contractors for drilling work and as needed. The inspectors determined that the licensee had sufficient staff to implement the radiation protection, groundwater monitoring, and environmental programs at its current operating level.

The licensee was in the process of removing old equipment to prepare for installation of new process equipment in the Highland CPP. The licensee had hired experienced health physics and demolition contractors to perform all work related to the project. The licensee's radiation safety staff ensured all work performed was in accordance with the licensee's procedures and license commitments. The inspectors observed the work being performed by the contractors and the licensee oversight process and found it to be adequate to ensure compliance with the license.

The inspectors reviewed two Safety and Environmental Review (SERP) panels related to the radiation safety staff. SERP/ Operational Review Committee (ORP) 10/11-2, dated October 6, 2011, approved the new position of Assistant RSO for the Highland CPP project. The Assistant RSO will have the same qualifications as the RSO, as specified in Regulatory Guide (RG) 8.31. This position will be filled when the licensee has an individual who meets the qualifications. The SERP review and documentation was completed in accordance with applicable requirements.

The inspectors reviewed SERP number 02/12-1, dated February 9, 2012, related to qualifying a health physics technician under the qualifications outlined in RG 8.31. To meet part of the specialized training in radiation health protection, the licensee had used 80 hours of algebra study. The inspectors challenged the licensee's determination that algebra classes met the definition of specialized training in radiation health protection. While this SERP determination did not violate the SERP process, the licensee indicated their intent to provide the individual with an additional 80 hours of formal training on radiation health protection. Once the additional 80 hours of training is completed, the licensee indicated their intent to hold another SERP to determine if all qualifications have been met.

b. Safety and Environmental Review Panel

The inspectors reviewed ORC/SERP 09/11-2, Test Deep Disposal Well (DDW) Installation at the Gas Hills remote satellite. This SERP would allow for installation of a test well at the Gas Hills remote satellite to identify possible formations that would be suitable for deep well injection. The SERP documentation identified the formations to be evaluated. The inspectors concluded that the licensee had implemented the SERP determination in accordance with the performance-based license conditions.

The inspectors reviewed ORC/SERP 09/11-1(s), extraction of uranium from phosphate resins. This SERP would allow for the licensee to extract uranium from ion exchange resins generated at phosphate mining facilities. At this point, the licensee plans to perform a pilot scale test to determine if full scale operations are possible. The SERP documentation indicated that the resins used at the phosphate facility are chemically and physically the same as what is used at the Smith Ranch Central Processing Plant. The inspectors agreed with the SERP determination, but cautioned the licensee that no activities should be performed pending finalization of the NRC's Regulatory Issue Summary related to this issue.

The inspectors reviewed ORC/SERP 10/11-5, which addressed the groundwater restoration plan for MU 4A. This SERP was prepared to address License Condition (LC)10.1.9.b. This LC requires the licensee to add new mine units to the restoration plan using the SERP process. The SERP documentation identified the groundwater restoration goals and discussed various aspects of restoration for this MU. This SERP was performed and approved in accordance with license requirements.

The inspectors reviewed ORC/SERP 10/11-6, which evaluated a change in routing of reverse osmosis reject water. This change would essentially provide an increase in the amount of available deep disposal well capacity. The SERP determined that the requirements of LC 9.4 would be met. The inspectors concluded that the licensee had

implemented the SERP determination in accordance with the performance-based license conditions.

The inspectors reviewed ORC/SERP 02/12-4, which evaluated the startup of MU K-North. The SERP documented the results of the hydrogeologic pump test, which demonstrated confinement of the ore zone from underlying and overlying aquifers as well as adequate communication between the ore zone and the perimeter monitor well ring. The SERP also documented unique features related to the underlying confinement near monitor well KMU-017 and described additional monitoring features planned for that portion of the MU. This SERP was performed and approved in accordance with license requirements.

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 was adequately supervising the contractors working on the Highland CPP. The licensee's safety and environmental review evaluations were performed 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

a. Unresolved Item 040-08964/0801-03

In response to Unresolved Item 040-08964/0801-03, identified by inspectors during the March 2008 inspection, the licensee committed to install four shallow 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. As discussed in the previous inspection report, the sampling results indicate that water has seeped from PSR2 into the surrounding sediments. The licensee has developed a characterization plan to evaluate the potential for migration of PSR2 water into the next deeper sandstone below PSR2. This characterization plan has been included in the licensee's license renewal application for the Smith Ranch facility, dated February 1, 2012. The staff will review the characterization plan as part of the license renewal process. Therefore, this Unresolved Item 040-08964/0801-03 is considered closed.

b. Recovery Operations and Restoration

At the time of this inspection, recovery operations were being performed at Highland MUs F, H, I, J, K, and K-North. Recovery operations were also being conducted at Smith Ranch MUs 2, 3, 9, 15, and 15A. Restoration activities were in progress at MUs C, D/D-extension, and E on the Highlands side and MUs 1, 4 and 4A on the Smith Ranch side. The licensee had recently initiated operations in MU K-North. Development is underway in MUs 7 and 10. Delineation is underway in MUs 8, 11, 16, 17, and I

extension. The licensee was in the process of installing replacement wells and upgrading header houses for several older mine units at the facility. These efforts have impacted progress on restoration activities.

At the time of the inspection, the licensee had seven deep disposal wells that were installed and available for use. 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 has not operated the satellite 2 land application system since July 2011. Section 5.2.c of this inspection report provides additional details about the disposal of wastewater via land application.

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 this time, seven MUs are in restoration, with MUC in restoration since 1999. Only one wellfield, MUA, has had its restoration approved by NRC and WDEQ. The licensee has significantly increased disposal capacity at the facility with the addition of disposal wells DDW 6, DDW 8, and DDW 10. Based on January 2012 data, the range of actual capacity reported by the licensee for the seven wells was 23-97 gallons per minute (gpm) with a total capacity of approximately 330 gpm. The land application system provides an additional 180 gpm of disposal capacity.

The groundwater restoration completion report for MUB 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. The licensee is in the process of revising its groundwater restoration completion report to request alternate concentration limits for the MUB. The licensee plans to submit the groundwater restoration completion report in the spring of 2012 for NRC review and approval.

d. Site Tours

The inspectors conducted site tours to observe in-situ recovery operations in progress. Areas toured included the Smith Ranch CPP, the Highland CPP (which is undergoing renovations) and the surrounding areas, the operating SR-1 satellite, selected mine units, selected header houses (HH), PSR2, 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 015525, calibration due date of 04/22/2012), and a Ludlum Model 2401-EC survey meter (NRC 21176G, calibration due date of 01/10/2013). 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. An Unresolved Item (URI 040-08964/0801-03) related to the purge storage reservoir 2 and its impact on groundwater was closed. Radiologically restricted areas were properly posted, plant parameters were within required operating intervals, and plant security met license requirements.

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 calendar year (CY) 2011. Approximately 79 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 CY 2011 was 586 millirems (5.86 milliSieverts).

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 sample results for CY 2011. The highest derived airborne concentration in hours (DAC-hrs) for radon daughters for an employee for CY 2011 was 88.39 DAC-hrs. The highest employee airborne uranium exposure was 1.86 DAC-hrs. The inspectors confirmed that the licensee had conducted air sampling at the required intervals.

The licensee collected urine bioassay samples to assess the potential for intakes of uranium. The inspectors reviewed the bioassay program to verify compliance with LCs 11.2 and 11.3. Since the previous inspection in August 2011, no bioassay results exceeded the action level of 15 micrograms uranium per liter of urine.

The licensee also monitors for soluble uranium intake in compliance with 10 CFR 20.1201e. The highest soluble intake of uranium for CY 2011 was calculated to be 1.64 milligrams of uranium. This is below the regulatory limit of 10 milligrams.

The highest total effective dose equivalent for an employee in CY 2011 was 716 millirem (7.16 milliSieverts). This is below the regulatory limit of 5000 millirems (50 milliSieverts).

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 reviewed the survey results and found them to meet the requirements of the license.

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 reviewed the survey results and found them to meet the requirements of the license.

c. Training

The licensee is required to conduct training in accordance with LC 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 the Highland CPP 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.

3.3 Conclusions

The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. The annual doses to employees are below occupational dose limits.

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, 2011, dated February 28, 2012 (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 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 2011 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 2011. 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 2011, all sample results were comparable to background levels.

The licensee reported the annual dose to the public from operations for CY 2011, 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 2011 to be 29.2 millirem (0.292 milliSieverts).

b. Groundwater and Surface Water Environmental Monitoring

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 by the licensee at the time of inspection had no sample data for the 20 possible surface water samples for the 2011 third and fourth quarter sampling events due to the stock ponds reported as dry. For the groundwater locations, the semiannual report provided sample data for 16 out of 36 possible groundwater samples. Twenty 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 LC 11.6.

The semiannual report also included results from Satellites 2 and 3 radium filter press effluents which are monitored as one grab sample after selenium treatment. The monitoring results show that none of the radium-226 concentrations in the six samples exceeded the 10 CFR Part 20, Appendix B, effluent concentration limit of 6.00E-8 microcuries per milliliter ($\mu\text{Ci}/\text{ml}$).

Water levels are measured on a quarterly basis and groundwater samples are collected on a semiannual basis from the six 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 2.2a 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 month that it operated (July 2011). 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.

c. Wellfield and Excursion Monitoring

During the previous inspection, one violation was identified (VIO 040-08964/1102-01), related to the failure to provide the NRC with a required 30 day spill report and other copies of excursions and spills that had been reported to the State of Wyoming, as required by a license condition. The licensee submitted the reports to the NRC by letter dated September 14, 2011. The licensee also trained additional employees on the requirements of regulatory correspondence. This violation is closed.

The licensee stated that two spills had taken place since the last inspection. The first spill occurred on December 6, 2011, in MU 9. The second spill was a release of clean water that occurred in MUC on February 17, 2012. Both spills were reported to the NRC as required by LC 12.1.

The inspectors reviewed the licensee's response to VIO 04008964/1102-02, dated December 21, 2011, related to the licensee's failure to have an alarm to notify wellfield

operators that an exceedance had occurred in a wellfield. The inspectors interviewed several licensee staff with knowledge of the spill and corrective actions taken. The licensee's corrective actions include: installation a new differential pressure alarm on the main trunk line between the SR-1 satellite and the CPP; installation of a new motor control valve in HH 15-20, and installation of a new electrical phase monitor at HH 15-20. The licensee has ordered additional equipment to expand these corrective actions to HHs 15-19, 15-21, 15-22, and 15-23, which the inspectors will verify during a future inspection. The staff understands the corrective actions taken to address the failure to alarm and agrees that these corrective actions are appropriate for this portion of MU 15A. This violation is closed.

During the previous inspection, the inspectors identified one Unresolved Item (URI 040-08964/1102-03) related to the spill in HH 15-20. The unresolved item was associated with commitments in the application related to injection pressures and potential damage to injection wells. By letter dated December 21, 2011, the licensee responded to this Unresolved Item. The licensee submitted a detailed report analyzing the pressure conditions in the injection and extraction wells supplied by HH 15-20 during the event. The report indicated that the pressures in the wells during the event did not exceed the maximum MIT pressure of 140 psi. The report also discussed the results of the integrity tests performed on the injection wells closest to HH 15-20. The two injection wells closest to HH 15-20 failed the integrity test; these two wells (151-0739 and 151-0741) were plugged and abandoned in October 2011. The inspectors reviewed the report and found the licensee's conclusions to be technically sound. The inspectors also discussed the event with the Satellite SR-1 plant operator, who provided the pressures recorded at the individual pressure gages on the injection and production circuits at Satellite 2 during the power outage event. The gages showed the pressures simultaneously dropped in both circuits because of the loss of flow from the production wells. This pressure drop showed it was unlikely that the maximum injection pressure of 110 psi at HH15-20 was exceeded. In addition, the operator stated it was likely that the valve that failed to close during the power outage would have still acted as a pressure reducer valve to keep the injection pressure at HH15-20 below 110 psi. The licensee indicated that they have undertaken an evaluation to determine any impact to groundwater due to the failure of the two MITs. This Unresolved Item will remain open pending the results from the evaluation by the licensee of the potential impacts to any aquifers from the two failed MITs. This information will be reviewed during a future inspection to determine if any violations of the license occurred.

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 some of the groundwater sampling records and concluded that these records indicated operational groundwater monitoring was being conducted as required by the license.

Two wells, DM-003 and DM-010, were in long term excursion status during the prior inspection. Since the previous inspection, the licensee reported two new wells went in excursion. Well JM-007 was reported on excursion on January 16, 2012, and a follow up report was provided on January 20, 2012. Well KM-031 was reported on excursion on September 8, 2011, and a follow up report was provided on September 14, 2011. According to the licensee, wells DM-003 and DM-010 are believed to be subject to the influence of nearby underground mine workings from previous uranium mine operators

not associated with this licensee. The licensee continues to undertake and evaluate corrective actions for these two wells.

The inspectors determined that the licensee had conducted the requisite monitoring for the excursion monitoring program and submitted the required reports within a timely manner pursuant to LC 11.5.

Since the previous inspection, the licensee has not reported any new leaks in the storage ponds. The licensee has continued to provide monthly status reports related to the June 13, 2011, leak in the east storage pond. The inspectors found the leak was reported and corrected in a manner consistent with LC 12.1.

License Condition 10.1.3 requires, in part, that a mechanical integrity test (MIT) be performed prior to an injection or recovery well being brought into service and every 5 years thereafter. The inspectors concluded that the licensee has performed MIT tests as required.

4.3 Conclusions

The licensee implemented environmental, groundwater, and surface water monitoring programs in accordance with the license. One violation was closed related to the failure of the licensee to provide a 30 day spill report to the NRC. One violation was closed related to failure to have an alarm that allows an operator to initiate corrective action. One unresolved item (URI 040-08964/1102-03) remains open related to a spill in Mine Unit 15, pending the licensee's results for determining if any contamination of an aquifer has occurred. The annual dose for members of the public was below regulatory limits.

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 2011 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. The inspectors reviewed the waste disposal agreement and found it to be valid. During CY 2011, sixty-six waste disposal shipments were made to the contract waste disposal site. Ten waste shipments have been made since January 2012. Material sent for disposal consisted of

11e.(2) contaminated equipment, such as filters, pipes, pumps, and soil. The inspectors reviewed selected shipping records found them to be complete.

The licensee also ships licensed yellowcake product off site. For CY 2011, a total of thirty-four 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.

b. Solid Radioactive Waste

During the August 2011 inspection, the inspectors identified one violation (VIO 040-08964/1102-04) related to the location of byproduct storage bins. License Condition 10.1.7 states, in part, that the licensee shall maintain an area within the restricted area boundary for storage of contaminated materials prior to their disposal. The licensee had two byproduct disposal bins, containing contaminated materials, stored in an unrestricted area adjacent to the CPP. The licensee responded to the violation by letter dated December 21, 2011. The licensee took corrective actions by placing a locked fence around the byproduct storage bins, thereby restricting the area. The inspectors concluded that the corrective actions were sufficient. This violation is closed.

c. 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 WDEQ requirements for land application.

During 2011, the licensee disposed of wastewater at the Satellite No. 2 land application facility, but not the Satellite No. 1 land application facility. The licensee last operated Irrigator No. 2 in July 2011. In accordance with Tables 5-8 and 5-9 of the license application, the licensee samples the irrigation fluid monthly at the PSR 2 suction line for the irrigator pivot 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 WDEQ's limit.

5.3 Conclusions

One violation related to the storage of byproduct storage bins in an unrestricted area was closed. The licensee was transporting radioactive material in accordance with NRC and DOT requirements. The licensee had 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.

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 March 1, 2012. The final exit briefing was conducted by telephone on March 9, 2012. 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

B. Berg, General Manager
D. Moody, Production Services Manger
J. McCarthy, Corporate Radiation Safety Officer
A. Faunce, 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

040-08964/1102-01	VIO	Failure to provide a 30 day incident report to the NRC
040-08964/1102-02	VIO	Failure to have an alarm for operators to initiate a corrective action
040-08964/1102-04	VIO	Failure to store byproduct waste material in a restricted area
040-08964/0801-03	URI	Verify whether PSR2 was leaking into the groundwater

Discussed

040-08964/1102-03	URI	Failure to evaluate if wells exceeded injections pressures after an incident
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LIST OF ACRONYMS USED

CPP	central processing plant
CFR	<i>Code of Federal Regulations</i>
DAC-hrs	derived air concentration hours
DDW	deep disposal well
DOT	U.S. Department of Transportation
gpm	gallons per minute
HH	header house
HPT	health physics technician
IP	NRC Inspection Procedures
LC	License Condition
MIT	mechanical integrity test
MU	mine unit
µCi/ml	microcuries per milliliter
ORC	Operational Review Committee
PSR	purge storage reservoir
RG	NRC Regulatory Guide
RSO	Radiation Safety Officer
SERP	Safety and Environmental Review Panel
URI	unresolved item
VIO	violation
WDEQ	Wyoming Department of Environmental Quality