



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

April 17, 2009

John McCarthy, Assistant Manager
Safety, Health and Environment
Power Resources, Inc.
P.O. Box 1210
Glenrock, Wyoming 82637

SUBJECT: NRC INSPECTION REPORT 040-08964/09-001

Dear Mr. McCarthy:

This refers to the announced, routine inspection conducted from March 17-19, 2009, at the Smith Ranch 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 inspection findings were discussed with you at the exit briefing conducted at the conclusion of the onsite inspection. The enclosed report presents the results of this inspection.

One Unresolved Item remains open from the March 2008 inspection related to the purge storage reservoir 2 (PSR2). After reviewing your July 25, 2008, response to the Unresolved Item, and based on information obtained during the inspection, the NRC inspectors concluded that the information provided by Power Resources, Inc. did not adequately confirm that the PSR2 was not leaking into the surrounding groundwater. As we discussed with you and your staff, and you subsequently acknowledged during the inspection, the July 25, 2008, letter should be supplemented with additional information about the PSR2. We suggested that the supplemental written plan clearly identify the specific methods that will be used to evaluate the conditions at PSR2 (e.g., chemical analysis of the ground water and fluid in PSR2, development of a conceptual model for PSR2, data analysis, additional sampling, or investigation to address data gaps, etc.). For completeness, Power Resources, Inc's supplemental written plan should also include a proposed implementation schedule.

During the inspection, you stated that the investigation for the January 10, 2009, spill at Satellite 2 was not complete, and that soil analysis data taken after the spill occurred would not be available for review by the NRC inspectors during the inspection. Additionally, the NRC inspectors determined, after reviewing your January 19, 2009, 30-day notification, that the information provided in the notification did not address your corrective actions and the results achieved, as required by License Condition 12.1. Therefore, as we discussed during the inspection, Power Resources, Inc. is requested to supplement the January 19, 2009, report to address the missing information required by License Condition 12.1, so that the NRC may make a final assessment on the spill that occurred on January 10, 2009. Specifically, the amended report should include your actions to determine radiological contamination of the building and

the surrounding environment, the clean up criteria used, remediation activities, actions taken to determine any employee exposures, and a summary of the Spill Committee meeting. We understand from your January 19, 2009, letter that the Spill Committee would have, among other items, discussed preventative measures to minimize the potential of releases from your operation and would have provided an assessment and corresponding recommendations to potentially mitigate recurrences. We are requesting that within 60 days of the receipt of this inspection report, you provide a written response to the supplemental items discussed in this report. Letters and supporting information provided by Power Resources, Inc. should be provided to the NRC Region IV Office with a copy to the NRC Project Manager.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

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 040-08964/09-001

cc w/Enclosure:
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bcc w/enclosure via e-mail:

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RIV:DNMS:NMSB-B	DNMS:NMSB-B	FSME:DWMEP	C:NMSB-B	
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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-08964

License: SUA-1548

Report: 040-08964/09-001

Licensee: Power Resources, Inc.

Facility: Smith Ranch In-Situ Recovery Facility

Location: Converse County, Wyoming

Dates: March 17-19, 2009

Lead Inspector: Linda M. Gersey, Health Physicist
Nuclear Materials Safety Branch B

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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 040-08964/09-001

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, and emergency preparedness. Additionally, the inspection included the follow-up of one Unresolved Item, the follow-up of previous enforcement actions, and the review of a 30-day notification of a spill that occurred on January 10, 2009, at the Satellite 2 facility.

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)
- The Safety and Environmental Review Panel evaluations that were conducted by the licensee appeared to have been completed in accordance with license requirements. (Section 1)
- One minor violation was identified related to the licensee's failure to provide the NRC with one Safety and Environmental Review Panel conclusion from calendar year 2006. (Section 1)

In-Situ Leach Facilities

- The licensee appeared to have conducted site operations at the licensee's in-situ recovery facilities in accordance with the performance-based license and regulatory requirements. (Section 2)

Radiation Protection

- The licensee had implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. (Section 3)

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

- The licensee did not release effluents into the environment during the third and fourth quarters of 2008 in quantities exceeding regulatory limits. (Section 4)
- The 2008 annual dose to the public was reported as below the regulatory limit. (Section 4)
- The licensee was requested to submit a supplementary report for the January 10, 2009, spill at Satellite 2 when its investigation is completed. (Section 4)
- The groundwater and environmental monitoring program reports were submitted to the NRC as required by the license. (Section 4)

Inspection of Transportation Activities and Radioactive Waste Management

- The licensee had conducted transportation and waste disposal operations in accordance with license and regulatory requirements. (Section 5)

Emergency Preparedness/ Emergency Procedures/Fire Protection

- The licensee maintained an emergency preparedness program that was adequate for current operations. (Section 6)

Follow-up

- One Unresolved Item that was related to purge storage reservoir 2 and its potential for leaking into the surrounding groundwater remains open pending NRC's review of additional information from the licensee. (Section 7)

Follow-up on Traditional Enforcement Actions

- The licensee implemented corrective actions for the three Severity Level IV violations identified during the September 2008 inspection. These violations were reviewed by the NRC inspectors and are considered closed. (Section 8)

Report Details

Site Status

At the time of the inspection, Power Resources, Inc. (PRI) was mining uranium through the in-situ recovery process. Four satellite facilities (Sat-2, Sat-3, SR-1 and SR-2) were in service and supporting 14 operating wellfields. Since the previous NRC inspection, conducted in September 2008, PRI had completed construction operations at satellite facility SR-2 and uranium recovery operations had been initiated at Mine Unit 9. The licensee indicated that before the end of the year (2009) they anticipate adding additional wells and header houses in Mine Unit 9. Uranium processing and drying operations were in progress at the Smith Ranch central processing plant (CPP). Uranium recovery operations had been previously discontinued by PRI at Satellite No. 1 and the Highland CPP.

The licensee was also 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 was also in the process of delineating ore bodies at the Gas Hills satellite, and the licensee stated that it plans to submit a revised operations plan to the NRC for this satellite during calendar year (CY) 2009. The North Butte satellite remains in standby and the licensee indicated they plan to submit a revised operations plan for this satellite to the NRC in CY 2009. The licensee's Ruth site continues to remain in standby.

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 organization structure is illustrated in Figure 9-1 of the February 2008 license amendment that was approved by the NRC on August 18, 2008. The NRC 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 120 current employees on staff and had 19 positions to fill. Since September 2008 the licensee had a turn over of 21 employees. Among the new employees hired since the last inspection, the licensee had employed a new hydrogeologist who was involved in restoration work. The NRC 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

License Condition (LC) 9.4 of the performance-based license requires, in part, that the licensee establish a Safety and Environmental Review Panel (SERP) to evaluate if any program changes require a NRC license amendment prior to the licensee's implementation. Two SERP evaluations were performed in 2008. The first SERP

evaluation, dated October 23, 2008, was the revision to the Safety, Health and Environment management by adding the temporary position of assistant manager. The second SERP evaluation, also dated October 23, 2008, was the Mine Unit 9 Hydrologic Test Report. The findings for both evaluations were submitted to the NRC as required by LC 9.4(e), and the licensee concluded that the changes did not require a NRC license amendment. The NRC inspectors reviewed the 2008 SERPs and concurred with both SERP conclusions.

The NRC inspectors reviewed three SERPs documenting bioremediation plans dated August 22, 2001, December 10, 2003, and January 7, 2009. The licensee has requested that the bioremediation plans be maintained as proprietary and therefore were not submitted in the licensee's annual report. These SERPs were evaluated by NRC inspectors during the on-site inspection and are consistent with the bioremediation activities proposed by the licensee to the NRC.

One minor violation of LC 9.4(e) was identified pertaining to the annual submittal of SERP reports to the NRC. The licensee's SERP dated July 14, 2006, a summary of the safety and environmental evaluation of Mine Unit K, was inadvertently not submitted to the NRC. Due to the minimal safety significance of this failure, this violation is not subject to formal enforcement action per Section IV of the NRC Enforcement Policy. The NRC will conduct their technical review of this SERP during the next inspection.

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 SERP evaluations that were conducted by the licensee appeared to have been completed in accordance with license requirements. One minor violation was identified related to the licensee's failure to provide the NRC with one Safety and Environmental Review Panel conclusion from CY 2006.

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 source material license.

2.2 Observation and Findings

The NRC inspectors conducted site tours to observe in-situ recovery operations in progress. Areas toured by the NRC inspectors included the Smith Ranch CPP, satellites SR-1, SR-2, Sat-2, and Sat-3, wellfields, Purge Storage Reservoir 2 (PSR2), irrigator 2, header houses in Mine Unit F, the east and west evaporation ponds, and an area used for storage of old equipment (referred to as the "boneyard"). Also during the site tours, the NRC inspectors observed the condition of tanks, valves, yellowcake thickener, fences, radiation postings, and gates.

At the time of this inspection, 14 mine units were actively in operation. The Wyoming Department of Environmental Quality (WDEQ) and the NRC had approved restoration activities at Mine Unit A. The WDEQ approved restoration activities at Mine Unit B in

early 2008 and the licensee plans to submit a report documenting restoration activities for this mine unit to the NRC in April 2009. Restoration activities are being performed at Mine Units C and 1, with Mine Units D-extension and E being prepared for restoration.

The NRC inspectors conducted independent radiological surveys using an NRC-issued portable survey meter. The surveys were conducted using a Ludlum Model 19 microRoentgen meter (NRC No. 015530 with a calibration due date of 12/18/09, calibrated to cesium-137). The ambient gamma exposure rates observed by the NRC inspectors varied from the background exposure rate of 15 microRoentgen per hour ($\mu\text{R/hr}$) up to greater than 5000 $\mu\text{R/hr}$ observed in the processing areas of the CPP and near some structures inside the satellite buildings. The dose rates observed by the NRC inspectors were consistent with licensee's measurements, and all areas with exposure rates in excess of 5 millirems per hour (5000 $\mu\text{R/hr}$) were posted as radiation areas as required by regulations.

During a visit to the east evaporation pond, the NRC inspectors observed the repairs completed by the licensee to the liner system. Since the September 2008 NRC inspection, a new synthetic liner had been installed in the east evaporation pond. The inspectors observed that the liner system installed by the licensee appeared to be functioning as designed. At the time of this inspection, the licensee was in the process of improving the condition of the fence surrounding the east and west evaporation ponds.

The NRC inspectors visited the "boneyard" area near the Smith Ranch CPP. The NRC inspectors noted that the licensee had made significant improvement in the visual appearance of the "boneyard" since the September 2008 NRC inspection. The licensee has been surveying equipment in the "boneyard" and any items found to be contaminated with byproduct materials is disposed of at an off-site 11e.(2) disposal facility. The licensee indicated to the NRC inspectors that at a minimum these "boneyard" reduction efforts will continue through the remainder of 2009. The NRC staff will review the licensee's progress in reducing the "boneyard" inventory during the next inspection.

The NRC inspectors visited the PSR2 impoundment to verify the condition of the embankment along the southern and eastern side of the reservoir. The embankment appeared to be in good condition after recently being restored. During the September 2008 NRC inspection, the licensee committed to improving the log sheets used by the licensee's staff for recording the visual embankment checks. The embankment check log sheets were modified based on inconsistencies found in previous log documents. The NRC inspectors verified that the licensee had updated the embankment check log sheet and had provided specific training on routine dam safety inspections.

The NRC inspectors visually observed the embankment area surrounding PSR2. The focus during the inspection was the monitoring well locations and any potential that might exist for discharge of groundwater to nearby surface water bodies. During the inspection, the NRC inspectors noted two monitoring wells (south and east) that had been used for the historic monitoring of the shallow groundwater. The two monitoring wells (south and east) are located within 10 feet of the berm surrounding PSR2.

2.3 Conclusions

The licensee appeared to have conducted site operations at the licensee's in-situ recovery facilities in accordance with the performance-based license and regulatory requirements.

3 **Radiation Protection (83822)**

3.1 Inspection Scope

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

3.2 Observations and Findings

a. Occupational Exposures

The NRC inspectors reviewed the licensee's dose assessment records through the fourth quarter of CY 2008. Approximately 54 employees were monitored for external exposures with thermoluminescent dosimeters that were exchanged on a quarterly basis. Occupationally monitored employees included Smith Ranch CPP operators, satellite/restoration operators, radiation technicians, and maintenance employees. The highest deep dose equivalent for CY 2008 was 431 millirems. At the time of the inspection, no data was available for first quarter 2009.

The licensee conducted air sampling, in part, for assessment of internal exposures. The NRC inspectors reviewed the licensee's air sampling records for radon-222 and uranium particulates that were performed from September 2008 through March 2009. Through a review of air sampling records, the NRC inspectors confirmed that the licensee had conducted sampling at the required intervals.

The licensee collected bioassay samples to assess the potential for intakes of uranium. The NRC inspectors reviewed the bioassay program to verify compliance with LCs 11.2 and 11.3. Since the September 2008 NRC inspection, no bioassay sample results exceeded the action level of 15 micrograms per liter, the action level specified in LC 11.2 for the implementation of corrective actions.

The licensee determines an occupationally exposed individual's internal exposure by using the combined totals from radon sampling, particulate sampling, personnel lapel monitoring, and bioassays for that individual. The highest total effective dose equivalent (TEDE) determined by the licensee (the sum of the internal and external doses) for CY 2008 was 538 millirems, which was assigned to a CPP operator. The NRC inspectors verified that the previous and current years' occupational doses for occupationally exposed individuals were below the regulatory limit of 5,000 millirems.

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 to verify radiation area postings and to assess external radiation conditions. The NRC inspectors determined that the licensee at the time of the inspection was conducting the gamma radiation surveys on a weekly

frequency. The NRC inspectors verified that the licensee had performed the required routine quarterly gamma radiation surveys during the last quarter of CY 2008 and first quarter of 2009.

Alpha contamination surveys were conducted by the license on a weekly frequency in clean areas of the site and in the process areas, although Section 9.13 of the license application requires monthly process area surveys. Equipment, materials, and trash prior to leaving the licensee's site were also routinely surveyed as required, and the licensee maintained the corresponding records for these contamination surveys. A review of the contamination survey records by the NRC inspectors indicated that nothing appeared to have left the site with contamination in excess of the licensee's prescribed release limits.

c. Training

The licensee conducts required training in accordance with LC 9.7 for its contractors and new employees, and provides annual refresher training for current employees. From September 2008 through March 2009, 57 new employees and contractors were provided training in radiation safety. The licensee stated that they plan to provide the annual radiation safety refresher training during the second quarter of 2009. The NRC inspectors reviewed radiation safety training records for three current employees, three new employees hired since September 2008, as well as several U.S. Department of Transportation (DOT) training records. All training activities and records were in accordance with the requirements of the license, NRC, and DOT regulations.

d. Instrumentation

The NRC 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 NRC inspectors reviewed instrument calibration certificates for several portable survey instruments and found the calibration certificates to be adequate, and the instruments currently calibrated. The NRC inspectors observed survey meters being used by the licensee's employees when exiting restricted areas. The survey instruments examined by the NRC 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.

4 Environmental Monitoring and Maintaining Effluents from Materials Facilities ALARA (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 40.60. The NRC inspectors reviewed the licensee's Semiannual Effluent and Environmental Monitoring Report for July 1-December 31, 2008, dated February 26, 2009, (referred to in this report as "semiannual report"). The licensee's environmental monitoring program consisted of air particulate, radon, ambient gamma radiation, groundwater, surface water, soil, and vegetation sampling.

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 air. None of the sample results for the third and fourth quarters of 2008 exceeded the respective effluent concentration limits specified in 10 CFR Part 20, Appendix B.

The licensee also sampled for radon-222 concentrations in air at the three sample stations. The NRC inspectors reviewed the radon-222 airborne concentration results for the third and fourth quarters of 2008. 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. For the third and fourth quarters of 2008, all sample results were comparable to background levels established by the licensee.

The calculated 2008 annual dose to the public from licensee operations was also included in the semiannual report. The licensee reported the TEDE to members of the public to be approximately 10.5 millirems for CY 2008. This dose was below the annual NRC limit of 100 millirems in one year.

b. Groundwater and Environmental Water Sampling

The NRC inspectors reviewed surface water, groundwater, and effluent monitoring data for the Highland and the Smith Ranch sites contained in the semiannual report and the quarterly monitoring wells report. Irrigator 1 did not operate during the monitoring period; therefore, irrigator 1 fluid was not analyzed. The semiannual report included data from both surface water sites and groundwater monitoring wells, Irrigator 1 and 2 soil data, Irrigator 1 and 2 vegetation, Irrigator 2 water, satellites Sat-2 and Sat-3 radium filter press effluents, Irrigator 1 and 2 lysimeters, and PSR2 groundwater monitoring data.

The NRC inspectors concluded that the licensee had implemented the groundwater and surface water monitoring programs in accordance with Chapter 5 of the license application. The monitoring consisted of quarterly sampling for natural uranium and radium-226 in groundwater wells and surface water sites used for livestock or for domestic water 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 8 out of 20 possible surface water samples (10 locations sampled two quarters; 12 samples were not collected because the surface water was dry). For the groundwater locations, the semiannual report provided sample data for 13 out of 36 possible groundwater samples (23 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.

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 six spills had taken place since the last inspection. The spills occurred on October 30, December 26, and December 29, 2008, and January 9, January 10, and February 9, 2009. Five of these spills were located in the wellfields and one was located at Satellite 2. The total volume of fluids released (i.e., not including any fluids recovered) ranged from 823 gallons to 14,600 gallons. Uranium concentrations of the spilled fluids ranged from 0.2 to 15 milligrams/liter.

The NRC inspectors discussed the January 10, 2009, spill that occurred at Satellite 2, with the licensee. Due to operator error, the spill occurred during a transfer of uranium-laded resins from an ion exchange vessel to a transport tanker truck. The spill released approximately 1800 gallons of production fluid outside the Satellite 2 building. The licensee reported this spill to the NRC project manager, as required by LC 12.1, although the follow up report dated January 19, 2009, did not address the licensee's corrective actions and the results achieved, as required by the license. The licensee had not completed their investigation by the conclusion of the onsite inspection. The licensee has agreed to provide a supplemental report to the January 2009 letter when their investigation is completed.

The NRC inspectors also noted that the licensee's procedure for emergency reporting contained the requirement to contact the NRC project manager regarding any spills within 48 hours, although LC 12.1 specifically requires notification within 24 hours. In addition, an internal checklist was used by the licensee to determine reportability of the event to the NRC Operations Center under 10 CFR 40.60. A review of the checklist by the NRC inspectors indicated that an incorrect annual limit on intake (ALI) for natural uranium (10 CFR 20, Appendix B) had been used by the licensee. Although the licensee had used the incorrect ALI for determining reportability, the NRC inspectors determined that the January 2009 spill was not reportable under 10 CFR 40.60. The licensee stated they would correct their emergency reporting procedure to reflect the correct ALI for natural uranium. The NRC inspectors will review the updated procedure during the next inspection.

During the inspection, the licensee described the leak detection monitoring system that had been developed for the newer portions of the facility. This monitoring system is used by the licensee to identify leaks at the wellheads and within the piping network. The licensee described the monitoring system as a mechanism that includes a network

of pressure monitors and flow meters located at key points in the piping system that are capable of identifying fluid leaks. Additionally, the licensee continues its efforts to develop a system of monitoring for leaks at the production and injection wellheads. The licensee's efforts to develop a more robust leak detection system was considered to be a proactive response by the licensee.

The licensee reported two new excursions since September 2008. The licensee indicated that three wells are currently on excursion status. Wells CM-15 and CM-33 are recent excursions and well DM-33 has been on long-term excursion status since January 2002. The licensee indicated that wells CM-15 and CM-33 are located in the C wellfield, and the licensee attributed these excursions, as well as the long-term excursion at well DM-33 (abutting the D wellfield), to the older underground mine workings. The licensee has retained a staff hydrogeologist to investigate potential corrective actions. The licensee continues to monitor the three wells on a weekly basis, as required by LC 11.5. The previous excursion in wellfield I (well IM-10) had been addressed and had been removed from the wells in excursion status.

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 (PSR1) was not in service during this reporting period. PSR2 was in use during this inspection period. The NRC inspectors reviewed the on-site log reports for the PSR2 weekly inspections. The NRC inspectors concluded that the minimum 4-foot freeboard was maintained during the reporting period.

License Condition 10.1.6 requires, in part, that the licensee maintain 3 feet of freeboard for the evaporation ponds. Two evaporation ponds (East and West ponds) were utilized by the licensee during portions of the reporting period. The NRC 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 during the reporting period.

License Condition 11.4 requires, in part, that the licensee monitor the leak detection system for the evaporation ponds on a daily basis. In the fall of 2008 the licensee completed replacement of the existing liner system in the East evaporation pond. On December 3, 2008, a new leak was detected at the East pond, which was attributed to deer encroachment into the pond. The liner repairs were completed by December 30, 2008.

The NRC inspectors reviewed the daily visual inspection log records for the evaporation ponds, records required by LC 11.4. Based on conversations with the licensee personnel, the NRC was notified on all occasions when the column exceeded the 6-inch minimum requirement and the sampling results indicated that the liquid in the leak detection system was from water in the pond (versus condensation). As a program enhancement, the NRC inspectors recommended that the log reports and/or inspection standard operating procedures be revised to record sampling results, when sampling is performed. Licensee personnel stated that they were in the process of revising the evaporation pond inspection procedures and would assess the recommendation.

License condition 10.1.3 requires, in part, that a well integrity test (mechanical integrity test (MIT)) be performed prior to an injection or recovery well being brought into service. The NRC inspectors observed the final stages of an MIT being performed on well 9I-235

(a new injection well in wellfield 9). The NRC inspectors noted that the MIT test was appropriately performed and the well passed the MIT. All wells are required to have MITs performed every 5 years. Based on a review of the quarterly reports, the NRC inspectors concluded that the licensee was performing the MIT tests in accordance with license.

License Condition 11.5 requires, in part, that the licensee monitor groundwater at the designated monitoring wells twice a month. The licensee has approximately 1300 groundwater monitoring wells that are sampled during a typical month using six field sampling personnel. The NRC inspectors observed the sampling of a groundwater monitoring well in the field by the licensee's employee. The NRC inspectors also reviewed a number of the 2008 groundwater monitoring well data for the Smith Ranch area. Based on the review, the NRC inspectors concluded that groundwater monitoring was being conducted as required by the license.

4.3 Conclusions

The licensee did not release effluents into the environment during the third and fourth quarters of 2008 in quantities exceeding regulatory limits. The 2008 annual dose to the public was reported as below the regulatory limit. The licensee was requested to submit a supplementary report for the January 10, 2009, spill at Satellite 2 when its investigation is completed. The groundwater and environmental monitoring program reports were submitted to the NRC as required by the license.

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

The licensee's transportation records maintained since the September 2008 inspection were reviewed by the NRC inspectors. Trucks with tanker trailers are routinely utilized by the licensee to transport resin to and from the satellite buildings and the CPP. The NRC inspectors reviewed selected resin tanker trailer shipping papers. The shipping papers reviewed by the NRC inspectors included the pertinent information required by 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 NRC inspectors verified that the waste disposal agreement was current. A total of 35 shipments in CY 2008 and 5 shipments since January 2009, of 11e.(2) byproduct material were shipped to a licensed disposal site. Material sent for disposal consisted of 11e.(2) contaminated equipment such as filters, pipes, and pumps. The NRC inspectors reviewed a selected sample of the shipping records for the most recent disposal shipments and found them to be complete.

The licensee also ships licensed material off site. In CY 2008, approximately 44 shipments of yellowcake, loaded in 55-gallon drums, were shipped to an out-of-state processing facility. Since January 2009 PRI has made 7 yellowcake shipments. The NRC inspectors reviewed a selected sample of shipping records and found them to be complete and in accordance with the DOT and NRC regulations.

5.3 Conclusions

The licensee was conducting transportation and waste disposal operations in accordance with license and regulatory requirements.

6 Emergency Preparedness/ Emergency Procedures/Fire Protection (88050/88064/88055)

6.1 Inspection Scope

Ensure that the licensee's emergency preparedness program was being maintained in a state of readiness.

6.2 Observations and Findings

Volume VIII of PRI's Operations Manual details the health physics and safety requirements for emergency preparedness. The NRC inspectors reviewed the licensee's procedures for radiological emergencies and emergency reporting. The NRC inspectors confirmed that the licensee had followed these procedures accurately while responding to the January 10, 2009, spill at Satellite 2. The NRC inspectors conducted interviews with satellite operators and determined that they were aware of their responsibilities and the licensee's expectations based on the specific type of emergency or spill that could be encountered. Fire extinguishers and first aid kits were found to be in good order in the CPP and other facilities visited by the NRC inspectors during the course of the inspection.

6.3 Conclusions

The licensee has an emergency preparedness program in place that was adequate for current operations.

7 Follow-up (92701)

7.1 Inspection Scope

Determine if the licensee has provided sufficient information to close an Unresolved Item related to PSR2.

7.2 (Discussed) Unresolved Item 040-08964/0801-03: Demonstrate that PSR2 is not leaking into neighboring areas

During the March 2008 inspection, the NRC identified an Unresolved Item related to PSR2 and its potential for leakage into neighboring areas. In a letter dated June 24, 2008, the licensee provided a response to this Unresolved Item. The staff reviewed the licensee's response and determined that it did not contain sufficient documentation for

the NRC staff to conclude that PSR2 was not leaking into neighboring areas. It is the understanding of the NRC inspectors that the licensee is actively pursuing resolution of the potential environmental impacts of the shallow groundwater. The NRC is requesting additional information from the licensee to resolve this issue and close out the Unresolved Item 040-08964/0801-03.

7.3 Conclusions

One Unresolved Item that was related to purge storage reservoir 2 and its potential for leaking into the surrounding groundwater remains open pending NRC's review of additional information from the licensee.

8 **Follow-up on Traditional Enforcement Actions (92702)**

8.1 Inspection Scope

Verify that three violations identified during the September 2008 NRC inspection were corrected as stated in the licensee's response to the Notice of Violation dated December 22, 2008.

8.2 Observations and Findings

a. (Closed) Violation 040-08964/0802-01: Exceedance of the dose limit for members of the public near the byproduct storage bins

During the September 2008 inspection, the NRC identified a violation of the dose limit of 2 millirem in any one hour, for members of the public, as specified in 10 CFR 20.1301(a)(2). The NRC inspectors determined by taking radiation surveys that the byproduct storage bins being stored near satellites Sat-2 and Sat-3 had exposure rates of up to 3500 $\mu\text{R/hr}$ per hour (3.5 millirem per hour) at one foot from the surface. Also, the NRC inspectors noted that the storage bins were not being restricted to public access. As a corrective action, the licensee surrounded the byproduct bins with a chain link fence and restricted access to the public by using chain locks. Using this physical arrangement, only licensee personnel have access to the areas. During the inspection, the NRC inspectors viewed the new fences and verified that the areas were locked. Confirmatory exposure rates taken by the NRC inspectors were found to be 1000 $\mu\text{R/hr}$ per hour (1 millirem per hour) at the fence line.

b. (Closed) Violation 040-08964/0802-02: Failure to store byproduct storage bins in a restricted area

During the September 2008 NRC inspection, a violation was identified that related to the licensee's failure to adhere to LC 10.1.7, which requires, in part, that the licensee maintain an area within the restricted area boundary for storage of contaminated materials prior to their disposal. The byproduct storage bins located at satellite Sat-3 and satellite Sat-2 contained items contaminated with licensed radioactive material that were in storage pending disposal. These storage bins were located in unrestricted areas, in contradiction to the requirements of LC 10.1.7 of the license. As a corrective action, the licensee surrounded the byproduct bins containing license material with a chain link fence and restricted access to the public by using a chain lock. Using this physical arrangement, only licensee personnel have access to the areas storing licensed

materials. During the inspection, the NRC inspectors viewed the new fences and verified that the areas were restricted and locked.

c. (Closed) Violation 040-08964/0802-03: Failure to control a restricted area

During the September 2008 NRC inspection, a violation of 10 CFR 20.1802 was identified for the licensee's failure to control and/or maintain constant surveillance of uranium contained in the T-207 transfer storage tank in the satellite SR-1 building, a controlled area. The corrective actions completed by the licensee included installing security gates with padlocks affixed at the bottom of the overhead doors in all satellites to allow the doors to remain open for ventilation when an employee is not in the vicinity of the satellites. The licensee also installed coded security locks on all exterior doors in each satellite building. The NRC inspectors verified that the security gates at the satellites were locked when the overhead doors were open and the exterior doors were locked.

8.3 Conclusions

The licensee implemented corrective actions for the three Severity Level IV violations identified during the September 2008 inspection. These violations were reviewed by the NRC inspectors and are considered closed.

9 Exit Meeting Summary

The NRC inspectors presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on March 19, 2009. During the inspection, the licensee did not identify any information reviewed by the NRC inspectors as proprietary.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Cannon, General Manager
K. Wenzel, Manager, Safety, Health & Environment
J. McCarthy, Assistant Manager, Safety, Health & Environment, Radiation Safety Officer
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
IP 88050	Emergency Preparedness
IP 88064	Emergency Procedures
IP 88055	Fire Protection
IP 92701	Follow-Up
IP 92702	Follow-Up on Traditional Enforcement Actions

ITEMS OPENED, CLOSED, AND DISCUSSED

Open

None

Closed

040-08964/0802-01	VIO	Exceeding the dose limit for members of the public near the byproduct storage bins
040-08964/0802-02	VIO	Failure to store byproduct storage bins in a restrictive area
040-08964/0802-03	VIO	Failure to control a restricted area

Discussed

040-08964/0801-03	URI	Demonstrate that PSR2 is not leaking into neighboring areas
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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
IP	inspection procedures
LC	license condition
µg/L	micrograms per liter
µR/hr	microRoentgens per hour
MIT	mechanical integrity test
NOV	Notice of Violation
PRI	Power Resources, Inc.
PSR1	purge storage reservoir number 1
PSR2	purge storage reservoir number 2
SERP	Safety and Environmental Review Panel
TEDE	total effective dose equivalent
URI	unresolved item
VIO	violation
WDEQ	Wyoming Department of Environmental Quality