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

July 14, 2015

Ms. Arlene Tiensvold, Radiation Safety Officer
Power Resources, Inc.
P.O. Box 1210
Glenrock, WY 82637

SUBJECT: NRC INSPECTION REPORT 040-08964/2015-001 AND NOTICE OF VIOLATION

Dear Ms. Tiensvold:

This refers to the announced, routine inspection conducted April 14-16, 2015, at the Smith Ranch uranium recovery facility in Converse County, Wyoming. This inspection was an examination of activities conducted under your license as they related 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. At the conclusion of the inspection on April 16, 2015, an exit briefing was conducted with you and other members of your staff. The enclosed report presents the scope and results of that inspection.

Based on the results of this inspection, the Nuclear Regulatory Commission (NRC) has determined that a Severity Level IV violation of NRC requirements occurred. This violation involves your failure to include the total quantity of hazardous material on shipping papers. The violation was evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at (http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-policy.html).

The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited because the NRC identified the violation in accordance with the requirements of NRC Enforcement Policy, Section 2.3.2.b.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The guidance in NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," may be helpful. You can find the Information Notice on the NRC website at http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/1996/in96028.html. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC review of your response to the Notice will determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures and your response to the Notice of Violation will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

To the extent possible, your response should not include any personal, privacy or proprietary 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/

Ray L. Kellar, P.E., Chief
Repository and Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Docket: 040-08964
License: SUA-1548

Enclosures:
1. Notice of Violation
2. NRC Inspection Report 040-08964/2015-001

cc:
Mr. Carl Anderson, Solid Waste
and Hazardous Division,
Wyoming Department of Environmental Quality
Mr. Kyle Wendtland, Land Quality Division
Wyoming Department of Environmental Quality
Mr. Miles Bennett, Land Quality Division, District 3
Wyoming Department of Environmental Quality
Mr. Scott Ramsey, Radiological Services Supervisor
Wyoming Department of Homeland Security

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✓ SUNSI Review By: **LMG**		ADAMS ✓ Yes ☐ No	✓ Publicly Available ☐ Non-Publicly Available	✓ Non-Sensitive ☐ Sensitive	Keyword:
OFFICE	RIV:DNMS/RSFS	NMSS:	RIV:RSFS:C		
NAME	LMGersey	DTMandeville	RLKellar		
SIGNATURE	**/RA/**	**/RA/**	**/RA/**		
DATE	07/08/15	07/02/15	07/14/15		

OFFICIAL RECORD COPY

NOTICE OF VIOLATION

Power Resources, Inc.
Glenrock, Wyoming

Docket No: 040-08964
License No: SUA-1548

During the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on April 14-16, 2015, a violation of NRC requirements was identified. In accordance with NRC Enforcement Policy, the violation is listed below.

> 10 CFR 71.5(a) requires, in part, that each licensee who transports licensed material outside of the site of usage, as specified in the NRC license, or where transport is on public highways, or who delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the Department of Transportation regulations in 49 CFR Parts 171 through 180, appropriate to the mode of transport.
>
> 49 CFR 172.202 (a)(5) requires, in part, that the shipping description of a hazardous material on the shipping paper must include the total quantity of hazardous materials covered by the description, as indicated (by mass or volume, or by activity for Class 7 materials), and must include an indication of the applicable unit of measurement.
>
> Contrary to the above, from August 8, 2014 through December 11, 2014, the licensee failed to include the total quantity of hazardous material covered by the description indicated by mass, volume, or activity for Class 7 materials on multiple transportation shipping papers. Specifically, 30 shipping papers associated with byproduct waste shipments identified the total activity of each shipment as 5.85 Becquerel (Bq), when the actual quantities shipped were 5.85 E+10 Bq.

This is a Severity Level IV violation (Section 6.8)

Pursuant to the provisions of 10 CFR 20.201, Power Resources, Inc. is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-001, with a copy to the Regional Administrator, Region IV, within 30 days of the date of this letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a “Reply to a Notice of Violation” and should include for each violation: (1) the reason for the violation, or if contested the basis for disputing the violation or severity level; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and, (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence if the correspondence adequately addresses the required response. If an adequate reply is not received with in the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should provide a copy of your response, with the basis for denial to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-001

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

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

Dated this 14 day of July 2015.

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	040-08964
License:	SUA-1548
Report:	040-08964/15-001
Licensee:	Power Resources, Inc.
Facility:	Smith Ranch In-Situ Recovery
Location:	Converse County, Wyoming
Dates:	April 14-16, 2015
Lead Inspector:	Linda M. Gersey, Health Physicist Repository and Spent Fuel Safety Branch Division of Nuclear Materials Safety Region IV
Accompanied by:	Douglas T. Mandeville, Project Manager Uranium Recovery Licensing Branch Decommissioning, Uranium Recovery and Waste Program Nuclear Materials Safety and Safeguards
	Dave Brown, Sr. Health Physicist Uranium Recovery Licensing Branch Decommissioning, Uranium Recovery and Waste Program Nuclear Materials Safety and Safeguards
	Lloyd Desotell, Hydrologist Uranium Recovery Licensing Branch Decommissioning, Uranium Recovery and Waste Program Nuclear Materials Safety and Safeguards
	Marti Poston, Health Physicist Repository and Spent Fuel Safety Branch Division of Nuclear Materials Safety Region IV
Approved by:	Ray L. Kellar, P.E., Chief Repository and Spent Fuel Safety Branch Division of Nuclear Materials Safety Region IV
Attachment:	1. Supplemental Inspection Information 2. SERP Evaluations

EXECUTIVE SUMMARY

Power Resources, Inc. Smith Ranch In-Situ Recovery Facility
NRC Inspection Report 040-08964/15-001

This inspection included a review of management organization and control, site status, site tours, site operations, radiation protection, environmental protection, transportation, radioactive waste management, and emergency preparedness. The licensee was conducting operations in accordance with regulatory and license requirements, with one exception.

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 1.2a)

- The licensee's safety and environmental review evaluations were performed in accordance with license requirements. (Section 1.2b)

- The licensee was conducting audits and inspections as required by regulatory requirements and the license. (Section 1.2c).

- The licensee had provided the appropriate reports to comply with the additional protocol requirements. (Section 1.2d).

In-Situ Leach Facilities

- The licensee was conducting in-situ recovery and restoration activities in accordance with the license and regulatory requirements. (Section 2.2)

- The licensee had submitted an updated financial assurance package for NRC review. (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 annual doses to employees were below occupational dose limits. (Section 3.2a)

- Training, instrumentation, radiological surveys, radiation work permits (RWP), and respiratory protection met license and regulatory requirements. (Section 3.2)

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

- The licensee conducted environmental monitoring in accordance with license requirements. (Section 4.2a)

- The annual dose to members of the public was below regulatory requirements. (Section 4.2b)

- Wellfield and excursion monitoring were conducted in accordance with license requirements. (Section 4.2c)

Inspection of Transportation Activities and Radioactive Waste Processing

- The licensee conducted solid and liquid waste disposal operations in accordance with the license and regulatory requirements. (Section 5.2)

- One violation of NRC and Department of Transportation regulations was identified. (Section 5.2b)

Emergency Preparedness

- The licensee was implementing an Emergency Response Program that is consistent with license commitments and operating procedures. (Section 6.2)

Report Details

Site Status

At the time of the inspection, Power Resources, Inc. was extracting uranium using the in-situ recovery process. Four satellite facilities (Sat-2, Sat-3, SR-1 and SR-2) and one remote satellite facility (North Butte) were in service and supporting 12 operating mine units (MUs), including two MUs at North Butte. Nine MUs were in active restoration and the licensee was preparing to start restoration in one additional MU this year. 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 Reynolds Ranch Satellite has received Wyoming Department of Environmental Quality (WDEQ) approval and the inspectors understand that a decision to proceed with construction depends on market conditions. The Gas Hills and Ruth Satellites are not in operation at this time, although the licensee inspects these facilities once per quarter.

1 Management Organization and Controls (88005)

1.1 Inspection Scope

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

1.2 Observations and Findings

a. Organizational Structure

The inspectors reviewed the licensee's organization structure for Smith Ranch and the North Butte Satellite facility. The Smith Ranch operation currently has approximately 101 full-time employees. This is a reduction of approximately 30 employees since the previous inspection in May 2014. The North Butte Satellite has 25 full-time employees, including one full-time qualified Health Physics Technician (HPT).

At the time of the inspection, the licensee had one vacancy at the Smith Ranch Operation and no vacancies at the North Butte Satellite. The licensee's Smith Ranch radiation safety staff consists of one Radiation Safety Officer (RSO), three qualified HPTs and one HPT in training. One of the qualified HPTs is currently being trained to act as the RSO for situations where the RSO is not available. 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.

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 program changes require an NRC license amendment prior to implementation. The inspectors reviewed 14 SERP evaluations performed by the licensee since the previous

inspection. Details related to the SERPs can be found in Attachment 2. The inspectors concluded that the license had implemented the Operational Review Committee/Safety and Environmental Review Panel (ORC/SERP) determinations for all 14 evaluations in accordance with the performance-based LCs.

c. Audits and Inspections

The inspectors reviewed the audits and inspections being generated by the licensee in accordance with LC 9.7 and NRC Regulatory Guide (RG) 8.31, "Information Relevant to Ensuring That Occupational Radiation Exposures at Uranium Recovery Facilities Will Be As Low As Reasonably Achievable." The licensee was conducting and documenting a daily walk-through of all work and storage area of the facility to ensure good radiation practices were being followed as required by LC 11.7. The HPTs or trained plant operators perform the daily walk-through. Results of the daily walk-through are posted in the control room for resolution by the operators. The RSO or HPTs, when the RSO is not available, perform the weekly inspection of all facility areas to observe general radiation control practices and review required changes in procedures and equipment. These weekly reports are provided to managers. The RSO generates a monthly report that summarizes the results of the weekly inspections, monitoring, and radiation exposure data which is provided to management for review. The inspectors found that the audits and inspections met the requirements contained in the license.

The licensee hired a contractor (R&D Enterprises, Inc.) to perform the annual audit of the radiation safety program as required by 10 CFR 20.1101(c). The inspectors reviewed the 2014 audit report dated March 30, 2015. The audit report included a review of occupational exposures, radiation survey results, documented training activities, and compliance with license and regulatory requirements. The inspectors found that the audit met the requirements of 10 CFR 20.1101(c).

d. Additional Protocol Verification

The inspectors verified that the licensee had provided the NRC with appropriate documentation to comply with 10 CFR 75.11, which relates to the agreement between the United States of America and the International Atomic Energy Agency for the Application of Safeguards in the US. The license had provided the four necessary forms that provide contact information, the capacity of yellowcake production, the actual annual yellowcake production, and the quantity of yellowcake on hand. The licensee discussed how they determined these numbers, and the inspectors found the reports to be accurate, complete, and consistent with the reports submitted on January 28, 2015 for calendar year (CY) 2014.

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's safety and environmental review evaluations were performed in accordance with license requirements. The licensee was conducting audits and inspections as required by regulation and the license. The licensee had provided the appropriate reports to comply with the additional protocol reporting 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. Purge Storage Reservoir (PSR) 2

Previous inspection reports have documented the licensee's actions to characterize seepage from PSR-2. During this inspection, the licensee provided a presentation, which summarized the recent actions related to the PSR-2 seepage investigation. The PSR-2 update continued to demonstrate compelling evidence that the groundwater in numerous monitoring wells in two shallow sand zones (140 and 130 sands) in the northern portion of MU-C reflected water quality similar to the wastewater in PSR-2. Additionally, the update confirmed that the groundwater elevations and flow directions also support the conclusion that the elevated chloride and other constituent levels in the shallow zones in MU-C North were associated with seepage emanating from PSR-2. NRC headquarters staff will provide clarification on the next steps to address PSR-2 in separate correspondence.

The licensee also summarized recent actions related to the ongoing casing leak investigation in MUs C, E and F. The licensee stated that a meeting was scheduled for the week of April 20, 2015, with the WDEQ, which is the lead agency for this investigation, to develop a remediation plan for the impacted areas.

b. Recovery Operations and Restoration

At the time of this inspection, uranium recovery operations were being performed at Smith Ranch MUs 3, 7, 9, 10, 15, 15A, F, J, K and K-North. Recovery Operations were also underway for North Butte MUs 1 and 2. Delineation was underway in Smith Ranch MUs 8, 11, 16 and 17 and North Butte MU-3.

During the inspection, the licensee provided an update on the status of wellfield restoration. Smith Ranch MUs 1, 4, 4A, C, D, D-ext, E, H and I were in restoration. MUs undergoing groundwater sweep and treatment are showing improvement with substantial declines in alkalinity, chloride, conductivity, and uranium. MU 4, D, and the southern portion of MU-E are progressing toward initiation of stability monitoring. Mine Unit 1 is in the stability-monitoring period. The licensee plans to start restoration in MU-2 once they receive approval from the WDEQ.

c. Site Tours

The inspectors conducted site tours to observe in-situ recovery operations in progress. Areas toured included the Smith Ranch CPP, including the control room, analytical laboratory and yellowcake drumming areas; the Vollman Ranch environmental monitoring station; PSR-2; the radium/selenium treatment building; Satellite 2 for which

all the MUs are now in restoration as of December 2014; Satellite SR-2, including the SRHUP#6 DDW; North Butte Satellite, including the NB-9 man camp air sampler location; and header houses (HHs) 10-8 and F-20. The inspectors observed plant equipment, radiation protection postings, and site security. The inspectors observed that a track-etch cup (passive radon-222 detector) at the Vollman Ranch air sampler location was lying on the ground below its perch on a nearby fence. Licensee staff placed the track-etch cup back on the fence and noted that it may have been down since the last visit on March 24, 2015. Inspectors will follow up during the next inspection to ensure data validation and assessment of the radon-222 value for this location includes consideration of the elevated radon-222 exposure received by this track-etch cup for as many as 21 days. Site security included locked entries into the CPP, HHs, satellites, and the radium/selenium treatment building and video surveillance at appropriate site locations. 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. The inspectors confirmed that the licensee was maintaining control of areas and equipment in accordance with license and regulatory requirements.

LC 10.1.2 states, in part, the requirements for maintaining effluent controls for the yellowcake dryer. The inspectors reviewed the checklists completed at the beginning of each operational work shift and noted that the operators ensure that the dryer vacuum is operating and the audible loss of vacuum alarm is functioning. The computer system logs the operating pressure differential from the dryer chamber every 15 minutes. The inspectors determined that the licensee was operating the dryer effluent controls in accordance with license commitments.

The inspectors discussed the venting of filled yellowcake drums with the operations staff due to recent personnel exposure issues associated with drum off-gasing at other uranium recovery facilities. The operations staff agreed to try several configurations of the lid and seal to facilitate venting but still allow the operations staff to move drums around the facility as necessary. The licensee discussed their preferred configuration method with the inspectors and the licensee agreed to modify their procedures to incorporate the agreed upon configuration. A copy of the modified procedure was reviewed by the inspectors on April 30, 2015.

The inspectors found that all entrance areas to the facility and wellfields were posted with the words, “Any Area Within This Facility May Contain Radioactive Material”, as required by LC 9.8. Additionally, the temporary storage of byproduct waste materials was located in fenced and locked restricted areas as required by LC 10.1.7.

The inspectors conducted independent radiological surveys of the gamma exposure rates present in the Smith Ranch CPP, satellite facilities, HH, radium/selenium treatment plant, and North Butte processing plant. The surveys were conducted using a Ludlum Model 19 microRoetgen survey meter (NRC 015540, calibrated using radium-226, calibration due 7/22/2015). Gamma exposure rates measured by the inspectors were as expected. Background readings of 40 microRoetgen per hour (µR/hr) were found outside the CPP and satellite buildings. The highest gamma exposure reading of 2000 µR/hr was measured in the CPP near a fresh elute tank (T-40). The inspectors did not identify any areas that had not already been identified and posted as radiation areas

by the licensee. The inspectors determined that the licensee identified and posted radiation areas as required by 10 CFR 20.1902.

d. Financial Assurance

In accordance with LC 9.5, the licensee submitted its most recent annual financial assurance updates for Smith Ranch on July 21, 2014; the Gas Hills Satellite on July 30, 2014; the Ruth Satellite on December 4, 2014; and for the North Butte Satellite on February 2, 2015. The staff completed its review of the Smith Ranch update, which was documented in License Amendment 21, dated March 26, 2015. The staff also completed its review of the Gas Hills update, which was documented in License Amendment 22, dated May 11, 2015. The reviews for North Butte and Ruth remain under evaluation by the NRC staff.

e. Highland Ponds

During the inspection, the NRC staff discussed the storm water management ponds located near the Highland CPP. The Highland CPP remains in standby, however, it appears that the ponds may have been previously used when the Highland CPP operated. The staff understands that the licensee performed additional record reviews to better understand land ownership and use issues related to the ponds, and that no cleanup activities have occurred to date. The NRC staff issued separate correspondence related to this issue on June 25, 2015, (see ADAMS Accession Number ML15148A373).

2.3 Conclusion

The licensee was conducting in-situ recovery and restoration activities in accordance with license and regulatory requirements. The licensee submitted an updated financial assurance package for NRC review.

3 Radiation Protection (83822)

3.1 Inspection Scope

Determine whether 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 inspectors reviewed the licensee's dose assessment records for CY2014 and the first quarter of 2015. Approximately 87 employees and contractors were being monitored for external exposure using 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 CY2014 was a CPP operator that received 630 millirem

(6.3 milliSievert). At the time of the inspection, dosimeter results were not yet available for the first quarter of 2015.

The licensee conducted air sampling, in part, for assessment of internal exposures. The inspectors reviewed the licensee's radon-222 progeny air sampling records and the uranium particulate and worker breathing zone sample results for CY2014 and the first quarter of CY2015. The highest derived airborne concentration in hours (DAC-hrs) for radon progeny for an employee in CY2014 was a CPP operator that received 39.34 DAC-hrs. The highest exposure to radon progeny for an employee during the first quarter of CY2015 was a CPP operator that received 23.14 DAC-hrs. The highest employee airborne uranium exposure during CY2014 was 4.6 DAC-hrs, received by CPP operator. The highest employee airborne uranium exposure for the first quarter of CY2015 was 0.93 DAC-hrs received by a CPP operator. All DAC-hrs results were below the regulatory limit of 2000 DAC-hrs. The inspectors confirmed that the licensee had conducted air sampling at the required intervals.

Urine bioassays are taken to ensure that the respiratory protection program and engineering controls for airborne uranium are being utilized appropriately. The licensee submits bioassays to an outside analytical laboratory for analysis on a monthly basis for the CPP operators, lab workers, and approximately five random workers, excluding office personnel. The inspectors reviewed the bioassay program to verify compliance with LCs 11.2 and 11.3. Since the previous inspection in May of 2014, no bioassay results exceeded the action level of 15 micrograms uranium per liter of urine. However, one bioassay result of 11.9 micrograms of uranium per liter of urine did occur since the last inspection and was investigated by the licensee. The inspectors reviewed the licensee investigation and found it to be adequate. No issues or concerns were identified.

The licensee also monitors for soluble uranium intake in compliance with 10 CFR 20.1201(e). The highest soluble uranium intake for CY2014 was received by a CPP operator and was calculated by the licensee to be 4.079 milligrams of uranium per year. The highest soluble intake of uranium for the first quarter of CY2015 was also received by a CPP operator and was calculated to be 0.823 milligrams of uranium over the first three months of 2015. These are below the regulatory limit of 10 milligrams soluble uranium per week.

The highest total effective dose equivalent for employees and contractors for CY2014 was a CPP employee that received 521 millirem (5.21 milliSievert). This is below the annual regulatory limit of 5000 millirem (50 milliSievert). The highest total effective dose equivalent for employees and contractors for the first quarter of 2015 is unavailable because the external dosimetry results were not available at the time of the inspection.

b. Radiation Protection Surveys

The licensee is required to perform quarterly gamma radiation surveys throughout the satellite buildings and CPP in accordance with LC 9.7, which incorporates RG 8.30, "Health Physics Surveys in Uranium Recovery Facilities," Regulatory Position 2.4, on external radiation survey frequencies. At the time of this inspection, the inspectors determined that the licensee was conducting the gamma radiation surveys on a monthly

frequency in all areas, except the HHs. Since there are approximately 500 HHs at the Smith Ranch uranium recovery facility, the licensee randomly selects about 50 per month for surveys. The inspectors reviewed the survey results and found them to meet the requirements of the license.

The inspectors reviewed weekly clean area surveys generated since the previous inspection for fixed and loose surface contamination for unrestricted and restricted areas. Alpha contamination surveys are conducted by the licensee on a weekly frequency in clean areas of the site and monthly in the process areas. For alpha contamination area surveys in unrestricted areas, the licensee requires removable alpha samples (i.e., smears) for total alpha contamination levels be less than 250 disintegrations per minute per 100 square centimeters. The inspectors found that contamination surveys were being conducted in accordance with LC 9.7 and RG 8.30.

c. Training

The licensee is required to conduct training in accordance with LC 9.7, RG 8.31, and Section 9.8 of the approved license application for its contractors and new employees, and to provide annual refresher training for current employees. The licensee database tracks all contractors and employee training and identified that 11 new hires and 53 contractors have been trained since the previous inspection. The annual radiation safety refresher training was conducted for all employees March 5-19, 2015. The inspectors reviewed the radiation safety training records for one employee hired since the previous inspection. The training records document that the inspector reviewed met the requirements of the license and regulatory guidance.

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 and maintenance records for several portable survey instruments and found the calibration certificates to be adequate, maintenance records adequately maintained 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 in calibration and were being used appropriately by the licensee staff.

e. Radiation Work Permits

Section 9.7 of the approved license application requires, in part, that the licensee will require a RWP when an employee is required to conduct activities of a non-routine nature where there is a potential for significant exposure to radioactive materials and no standard operating procedure exists for the activity. Between January 1, 2015 and April 14, 2015, 8 RWPs were used by the licensee. The licensee's process for hazard identification has the responsible supervisor and his team, develop a job hazard analysis (JHA) document, which is then passed to the Safety, Health, Environment, and Quality group, who generate the RWP. The inspectors noted that the RWPs included the appropriate personal protective equipment, respiratory protection, and air monitoring.

The RWPs that were reviewed in conjunction with the licensee's internal procedures and license commitments were found to have met license requirements.

f. Respiratory Protection

The inspectors examined the respiratory protection equipment and reviewed the licensee's procedures for respiratory protection. All respirators used at the facility were National Institute for Occupational Safety and Health certified and those examined by the inspectors appeared in like-new condition. The licensee's respiratory protection procedures include fit-testing of respirators for employees, inspection, and storage of respirators, and annual audits of the respiratory protection program. The inspectors found the licensee's respiratory protection program to meet the license application and regulatory requirements.

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 were below the occupation dose limits. Training, instrumentation, radiological surveys, RWPs, and respiratory protection met license and regulatory requirements.

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 11.6 requires the licensee to establish an effluent and environmental monitoring program in accordance with the Section 5.3 of the approved license application. The inspectors reviewed the licensee's Semiannual Effluent and Environmental Monitoring Report for July 1 through December 31, 2014, dated February 26, 2015 (referred to in this report at the "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 for WDEQ, sampling occurs of the soil and vegetation, irrigation fluid, radium treatment system samples, soil samples at the irrigation areas and monitoring wells at PSR-2.

Continuous air particulate sampling was conducted at five locations for the Smith Ranch-Highland site and six locations at the North Butte satellite facility. The Smith Ranch – Highland stations monitored conditions at a background station, downwind of the Smith Ranch CPP restricted area boundary, the nearest downwind resident to the Smith Ranch CPP restricted area, downwind of the Highland CPP restricted area boundary, and

downwind resident of the Highland CPF restricted area. The licensee stated that it discontinued monitoring at two locations nearest the Highland CPP at the end of CY2014 because it had completed construction activities and the Highland CPP is not yet operational. The North Butte satellite facility locations include a background station, the nearest public residence to the North Butte satellite area, north side of the satellite, downwind of the North Butte area and wellfields, the south side of the satellite, and the satellite pad next to the man camp. The sample results reported by the licensee for natural uranium, radium-226, thorium-230 and lead-210 particulate monitoring indicated that airborne concentrations were at or near background concentrations.

The licensee also sampled for radon-222 concentrations in air at thirteen sample stations (Smith Ranch-Highland and North Butte areas). The inspectors reviewed the radon-222 concentrations and found the concentrations at all sample locations were lower than the 1E-08 microcurie per milliliter value approved in the Smith Ranch license.

b. Doses to Members of the Public

The inspectors evaluated the licensee's calculation of annual dose to the public from operations for CY2014, as required by 10 CFR 20.1302. The maximum dose calculated by the licensee was less than 100 millirem (1 milliSievert). The licensee, using 10 CFR 20.1302(b)(1), demonstrated that the annual total effective dose equivalent to a person at the nearest residence was less than 100 millirem. The licensee calculated the highest total effective dose equivalent to a member of the public in CY2014 to be 5.8 millirem (0.058 milliSievert) for the Smith Ranch facility and 6.9 millirem (0.069 milliSievert) for the North Butte facility.

The inspectors also evaluated the licensee's compliance with the 10 CFR 20.1101(d), constraint on air emissions. This dose excludes radon-222 and its progeny. Using the licensed area boundary near the Highlands CPP, represented by air monitoring station #AS-4 (HUP Overlook), the licensee calculated the maximum dose for CY2014 to be 0.33 millirem (0.0033 milliSievert), excluding radon-222 and its progeny. This maximum dose for a member of the public is under the 10 millirem (0.1 milliSievert) per year dose constraint specified by 10 CFR 20.1101(d).

During the previous inspection in May 2014, the inspectors observed that the 4th quarter CY2013 effluent concentration of Pb-210 (suspended) in water at Beck Well was 103% of the limit for the quarter. The Pb-210 annual average concentration at this location was found to be 27% of the limit in water, which complies with 10 CFR 20, Appendix B, Table 2 limits. The inspectors also observed that there was no mention of the quarterly exceeded effluent limit for Pb-210 in the semiannual report. During this inspection, the inspectors evaluated the licensee's follow-up activities. The licensee removed Beck Well, an operating domestic water well, and an operating stock well (Brown #5) from the sampling schedule because these locations were outside the one kilometer radius of any operating wellfield as stated in Section 5.3.5, "Environmental Ground Water Monitoring Program," of the approved license application. In addition, the licensee is only required to monitor uranium and radium-226 in groundwater, in accordance with Section 5.3.5 of the approved license application.

c. Wellfield and Excursion Monitoring

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

At the time of the last inspection in May 2014, perimeter monitoring wells DM-003 and DM-004 were on excursion status. Since that time, both wells failed mechanical integrity testing and have been replaced with wells DM-003a and DM-004a respectively. Sampling of these replacement wells indicated that DM-004a is no longer on excursion status, while DM-003a remains on long-term excursion status. These wells are located near underground mine workings from previous uranium mine operators not associated with this licensee. The licensee is pumping nearby wells to control excursion at DM-003a.

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

The licensee reported that both the east and west storage ponds have been taken out of operations. The west pond has been relined. Fluid and sediment is being removed from the east pond, so that it may be relined. The inspectors found the operation of the east and west storage ponds continue to be reported in a manner consistent with LC 12.1.

The inspectors reviewed the spills since the last inspection; five reportable spills had taken place since the last inspection. The five releases were evaluated and reported to the NRC as required by LC 12.1.

4.3 Conclusions

The licensee conducted environmental monitoring in accordance with license requirements. The annual dose to members of the public was below regulatory limits. Wellfield and excursion monitoring was being conducted in accordance with license requirements.

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

5.1 Inspection Scope

Determine if transportation and disposal activities conducted by the licensee were being 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 previous inspection. The licensee transports resin to and from the satellite buildings and the CPP routinely with trucks equipped with tanker trailers. The licensee also ships licensed yellowcake product to Honeywell for processing. During CY2014, the licensee made 65 yellowcake shipments. Five of the 65 shipments to Honeywell contained toll-milled yellowcake for Uranerz Energy Corp. From January 2015 to April 2015, the license made 16 yellowcake shipments, two of which were toll-milled yellowcake from Uranerz. The inspectors reviewed a selected sample of resin and yellowcake shipping records and found them to be complete and in accordance with U.S. Department of Transportation (DOT) and NRC regulatory requirements.

b. Solid Byproduct Waste

License Condition 9.6 requires, in part, that the licensee possess a waste disposal agreement to dispose of 11e.(2) byproduct material at an approved offsite location. During CY2014, the licensee had made 70 shipments of waste to a licensed facility. The inspectors evaluated shipping papers (i.e., Bill of Ladings, radiological survey forms, byproduct material shipping, disposal manifest forms, and other documentation) for 39 shipments of 11e.(2) byproduct material to offsite disposal facilities from August 2014 through December 2014. These shipments included items such as Satellite 2 field trash, selenium removal process sand and soil and sediment from evaporation ponds. During CY2015, the licensee had made 15 waste shipments to a licensed facility.

The inspectors reviewed the shipping papers for thirty 11e.(2) pond material waste shipments. The inspectors noted that each of the thirty shipping papers, dated from August 8, 2014, through December 1, 2014, stated that the total activity of the shipment was 5.85 Bq. When the inspectors questioned the licensee about the activity listed on the paperwork, it was discovered that the total activity of each shipment was in fact 5.9E+10 Bq. This is a violation (040-08964/15-01-01), of 49 CFR 172.202(a)(5), which requires, in part, that shipping papers must include the total quantity of hazardous material covered by the description as indicated by mass, volume, or activity for Class 7 materials and must include the applicable unit of measurement. The licensee explained that because these shipments contained the same volume of contaminated solids from one location, it had prepared multiple copies of an original shipping paper that contained the activity error.

License Condition 10.1.7 states, in part, that the licensee shall store 11e.(2) byproduct material in a restricted area. The inspectors observed that all waste storage bins were in restricted areas with surrounding fences and locked entries. Each area was posted appropriately as a restricted area and if necessary as a radiation area.

c. Review of Wastewater Treatment

As described in the license application, the licensee is authorized to dispose of plant and wellfield operations wastewater through land application or deep disposal well (DDW)

injection. The license currently has seven DDWs installed and authorized for use at Smith Ranch. The licensee provided the inspectors with the current waste disposal rates for each of the operating DDWs.

The range of actual capacity reported by the licensee for the six wells that were operation at the time of inspection was approximately 12-60 gallons per minute (gpm) with a total capacity of 225 gpm. DDW 2 has not been operational since January 2015 and its capacity is not included in the above total. The licensee indicated it was not clear when DDW 2 would become operational again. DDW 7 has been installed and the licensee is waiting for an authorization to inject from WDEQ. DDW 8 is permitted but has not been installed.

The license application authorizes the licensee to dispose of wastewater at PSR-1, PSR-2 and the related land application facilities. PSR-1 and its associated land application facility is currently not in use. Prior to discharge to PSR-2, the plant's 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. The land application system at PSR-2 provides an additional 180 gpm of disposal capacity.

The license expects to resume land application activities in June 2015, depending on weather conditions. 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 picot for natural uranium, radium-226, selenium, and other chemical constituents.

5.3 Conclusions

The licensee was conducting solid and liquid waste disposal operations in accordance with the license and regulatory requirements. One violation of NRC and the Department of Transportation regulations was identified.

6 Emergency Preparedness (88050)

6.1 Inspection Scope

Determine if emergency preparedness activities were conducted in accordance with the licensee's operating procedures.

6.2 Observations and Findings

The licensee has two certified Emergency Medical Technicians certified by the State of Wyoming. Monthly safety meeting are conducted to discuss emergency response, confined space rescue, hazardous material and wildfire issues. The licensee had two well-stocked trailers for responding to a confined space entry rescue and hazardous materials/radiation spill. Three water trucks are available for fire suppression. The license also has regular communications with the County Sheriff Department, ambulance services and the local Fire Chiefs. The inspectors found the licensee fully prepared to respond to emergencies.

The inspectors discussed the emergency training and examined training records for members of the Basic Medical Response Team, confined space entry rescue team, hazardous materials team, and the wild land fire team. The inspectors found that the training was conducted in accordance with the licensee procedures and license commitments.

6.3 Conclusions

The licensee was implementing an Emergency Response Program that is consistent with license requirements and operating procedures.

7 Exit Meeting Summary

The NRC inspectors presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on April 16, 2015. During the inspection, the licensee did not identify any information received by the NRC inspectors as proprietary that was included in the report.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. Hiser, Acting General Manager
K. Garoutte, Safety, Health, and Environment Quality Manager
A. Tiensvold, Radiation Safety Officer
T. Coleman, Health Physics Technician

INSPECTION PROCEDURES USED

IP88005	Management Organization and Controls
IP89001	In-Situ Leach Facilities
IP83822	Radiation Protection
IP88045	Effluent Control and Environmental Protection
IP87102	Maintaining Effluents from Materials Facilities ALARA
IP86740	Inspection of Transportation Activities
IP88035	Radioactive Waste Processing, Handling, Storage and Transportation
IP88050	Emergency Preparedness

ITEMS OPENED, CLOSED AND DISCUSSED

Open

VIO 040-08964/15-001-01	Failure to include the total quantity of hazardous material on shipping papers.

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
Bq	Becquerel
CPP	Central Processing Plant
CFR	Code of Federal Regulations
CY	calendar year
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 Procedure
JHA	Job Hazard Analysis
LC	License Condition
mrem	millirem
MU	mine unit
NRC	U.S. Nuclear Regulatory Commission
µR/hr	microRoentgen per hour
ORC	Operational Review Committee
Pb	Lead
PSR	purge storage reservoir
RG	NRC Regulatory Guide
RSO	Radiation Safety Officer
RWP	radiation work permit
SERP	Safety and Environmental Review Panel
WDEQ	Wyoming Department of Environmental Quality

SERP EVALUATIONS

1. ORC/SERP 2/14-2 dated February 6, 2014, approved the use of sodium bicarbonate as a restoration chemical. The use of sodium bicarbonate in restoration will be differentiated from its use in production by the absence of an oxidizer.

2. ORC/SERP 3/14-4 dated March 6, 2014, approved a research project involving bio-stimulation to promote growth of naturally occurring bacteria beneficial to restoration.

3. ORC/SERP 4/14-7 dated April 22, 2014, addressed the MU-2 groundwater restoration plan as required by License Condition (LC) 10.1.9.

4. ORC/SERP 6/14-10 dated June 10, 2014, presented the MU-I groundwater restoration plan as required by LC 10.1.9.

5. ORC/SERP 6/14-11 dated June 10, 2014, documented the completion of qualification and training requirements of an Health Physics Technician (HPT) in training to allow the individual to function as a HPT in accordance with the guidance provided in
   Regulatory Guide 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will Be As Low As Reasonably Achievable" (RG 8.31).

6. ORC/SERP 7/14-13 dated July 30, 2014, documented the changes to the organizational structure, and associated revisions to Chapter 9 of the approved license application.

7. ORC/SERP 8/14-15 dated August 19, 2014, evaluated, and approved the MU-7 natural attenuation research project to measure the rate at which heavy metals are immobilized by exposure to uranium ore pre-mining.

8. ORC/SERP 8/14-16 dated September 15, 2014, presented the Central Processing Plant (CPP) building annex and tank additions, as well as other modification to improve production efficiencies and create a pull through trailer bay for shipments of ion exchange resin. At of the time of the inspection, this project had not been completed.

9. ORC/SERP 9/14-18 dated September 17, 2014, documented rerouting of restoration fluid piping through the resin columns prior to reverse osmosis treatment at the SR-1 facility. These changes provide consistency in setup throughout the satellite facilities.

10. ORC/SERP 9/14-19 dated October 2, 2014, presented the location changes for three of the North Butte air stations. The inspectors reviewed the documentation available in the SERP and agreed that air samplers have been placed in appropriate locations in accordance with the guidance in Regulatory Guide 4.14,

Revision 1, “Radiological Effluent, and Environmental Monitoring at Uranium Mills.”

11. ORC/SERP 11/14-20 dated November 6, 2014, addressed changes to the radiological survey processes for receipt of the Toll Milling Resin Shipments. This change was necessary to satisfy LC 10.1.2.

12. ORC/SERP 12/14-21 dated December 4, 2014, evaluated the addition of a tank, mixing system, and conveyer to add sodium bicarbonate at satellite SR-1.

13. ORC/SERP 1/15-01, dated February 10, 2015, presented the Smith Ranch CPP waste water reduction plan.

14. ORC/SERP 2/15-02, dated February 10, 2015, addressed changes to the organizational chart and to Section 9 of the NRC Operations Plan.