



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

December 21, 2016

Mr. John Cash, Vice President
Regulatory Affairs
Lost Creek ISR, LLC
58800 Enterprise Drive, Suite 200
Casper, WY 82609

SUBJECT: NRC INSPECTION REPORT 040-09068/2016-001

Dear Mr. Cash:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) announced inspection conducted at your Lost Creek in-situ recovery facility in Sweetwater County, Wyoming, from September 27-29, 2016. The 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 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 members of your staff during a preliminary exit conducted September 29, 2016. The NRC continued its review and recharacterized several findings. A final exit was conducted with you and your staff, telephonically on November 22, 2016, with a follow-up phone call on December 13, 2016.

Based on the results of the inspection, the NRC has determined that four violations of NRC requirements have occurred. These violations involved failure to: (1) conduct a Safety and Environmental Review Panel (SERP) or request a license amendment for organizational changes and a change in duties and responsibilities associated with personnel in the Environment, Safety and Health (ESH) Program; (2) properly secure radioactive material in storage; (3) obtain a radiation work permit prior to accessing the dryer; (4) perform adequate material release surveys. These violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report.

These violations were evaluated in accordance with the NRC Enforcement Policy included on the NRC Web site at www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. In accordance with Section 2.3.2.b of the NRC Enforcement Policy, the four violations are being cited in the enclosed Notice of Violation (Notice) because they were either identified by the NRC during an inspection or because the licensee failed to take comprehensive corrective actions to prevent recurrence. The circumstances surrounding the violations are described in detail in the subject inspection report.

J. Cash

- 2 -

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. 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 "Agency Rules of Practice," a copy of this letter, its enclosure(s), and your response, 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. Bernadette Baca, Health Physicist at (817) 200-1235, or the undersigned at (817) 200-1549.

Sincerely,

/RA/

Lee Brookhart, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Docket: 040-09068

License: SUA-1598

Enclosure:

1. Notice of Violation
2. Inspection Report 040-09068/2016-001

cc: S. Ramsay, Wyoming Office of Homeland Security
M. Rogaczewski, Wyoming Department of Environmental Quality, Region III Supervisor
R. Schierman, Wyoming Department of Environmental Quality, Land Quality Division
N. Williams, Wyoming Department of Environmental Quality, Region II Supervisor

NOTICE OF VIOLATION

Lost Creek ISR, LLC
Sweetwater County, Wyoming

Docket: 040-09068
License: SUA-1598

During the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on September 27-29, 2016, four violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. License Condition 9.2, requires, in part, that the licensee conduct operations in accordance with the commitments, representations and statements contained in the license application dated March 31, 2008, and its supplements.

License Condition 9.4 allows, in part, for the licensee to make changes in the facility, procedures and experiments without obtaining an amendment, provided these changes are reviewed by a Safety and Environmental Review Panel (SERP) and records of the changes are maintained.

Figure 5.1-1 *Organizational Chart* is part of the Technical Report submitted in the initial application dated March 31, 2008, and was updated via a supplement dated April 22, 2010. The organization and chart were also revised using the SERP process in June of 2013. The most recent version of Figure 5.1-1 detailed an organization which included the following: Environment, Health and Safety/Radiation Safety Officer (EHS/RSO), Mine Geologist, Drill Supervisor, Project Engineer/Maintenance Supervisor, and Wellfield Operations Superintendent.

Section 5.1 is part of the Technical Report submitted in the initial application dated March 31, 2008, and was updated via a supplement to the license dated April 22, 2010. Section 5.1.5 of the Technical Report detailed the duties and responsibilities of the Site Supervisor EHS/RSO. This section identified the responsibilities of this position as follows: "developing and implementing safety and environmental programs, properly maintaining and retaining records and assisting the mine staff to comply with regulations and license conditions applicable to employee health protection." Examples of responsibilities assigned to this position include, but are not limited to, the following: Designated site Quality Assurance/Quality Control (QA/QC) coordinator; conducting routine training programs for employees regarding emergency response and environmental control; inspection of facilities to verify compliance with safety requirements and the QA/QC program; routine auditing of all operational and monitoring programs for the QA/QC program.

Contrary to License Condition 9.2, from March 2015 through September 2016, the licensee failed to comply with the commitments, representations and statements contained in the initial application dated March 31, 2008, and its supplements since changes were made to the organizational chart and the associated job duties/responsibilities as described in the Technical Report without obtaining a license amendment or being reviewed through the SERP process as required by License Condition 9.4. Specifically, on December 11, 2015, the licensee modified the organizational chart to: (1) split the position of Project Engineer/Maintenance Supervisor to two separate positions, a non-supervisory Project

Engineer and Maintenance Foreman who retained responsibility for the staff assigned to this department; (2) downgraded the Drill Supervisor position and moved that position and its subordinate organization so that it reports to the Chief Production Geologist; and (3) changed the job title of Mine Geologist to the Chief Production Geologist and assigned this position responsibilities formerly assigned to the Drill Supervisor. Subsequent to these changes, on September 8, 2016, the Wellfield Operations Superintendent was split into two separate positions: Wellfield Construction Supervisor Position and a Wellfield Operations Supervisor Position. In addition, on March 30, 2015, the licensee appointed an individual as the Radiation Safety Officer rather than the Site Supervisor Environment, Health and Safety/Radiation Safety Officer, and this person was no longer responsible for QA/QC coordination; conducting routine training programs regarding emergency response and environmental control; inspection of facilities to verify compliance with safety requirements and the QA/QC program; routine auditing of all operational and monitoring programs for the QA/QC program; and any employee health protection functions identified under Section 5.1.5 of the Technical Report. Since the licensee did not SERP these changes as required by License Condition 9.4, the licensee was required to obtain a license amendment before implementing these changes to the license and license tiedowns.

This is a Severity Level IV violation (Supplement 6.3.d.).

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

Contrary to the above, on September 27, 2016, the licensee failed to secure from unauthorized removal or access licensed materials that were stored in controlled or unrestricted areas. Specifically, during the inspection tour of the Central Processing Plant on September 27, 2016, the waste storage area for 11.e(2) waste, waste produced by the extraction of uranium from ore processed for its source content material, was found unsecured. The padlock had a hasp that would not engage to hold the securing chain in place.

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

- C. License Condition 10.4 requires, in part, the licensee shall develop and implement written standard operating procedure (SOPs) for all operational activities involving radioactive and nonradioactive materials associated with licensed activities that are handled and processed. Standard Operating Procedure OPS-025, Revision 3, "Yellow Cake Dryer Operation," Section 6.7 states, in part, accessing the inside of the dryer requires a radiation work permit (RWP).

Contrary to the above, on December 2, 2015, a dryer operator accessed the dryer without obtaining a RWP. Specifically, the dryer operator accessed the dryer to unplug the knife valve without first obtaining an RWP. This issue is a repeat of a prior violation 040-09068/2015001-01 (ML15254A403).

This is a Severity Level IV violation (Section 6.3.d.).

- D. Title 10 CFR 20.1501 requires, in part, that each licensee shall make or cause to be made, surveys, necessary for the licensee to comply with the regulations in this part, that are reasonable under the circumstances to evaluate: (i) the magnitude and extent of radiation levels, (ii) concentrations and quantities of residual radioactivity; and, (iii) the potential radiological hazard of the radiation levels and residual radioactivity detected.

10 CFR 20.1302 states, in part, the licensee shall make or cause to be made, as appropriate, surveys of radioactive materials released to unrestricted areas to demonstrate compliance with the dose limits for individual members of the public.

Survey means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation or concentrations or quantities of radioactive material present.

Contrary to the above, on multiple occasions between June 15, 2014, and September 28, 2016, the licensee did not make or cause to be made surveys that were reasonable under the circumstances to evaluate the magnitude and extent of radiation levels and the potential hazard of radiation levels and residual radioactivity detected on materials released to unrestricted areas to demonstrate compliance with dose limits for individual members of the public. Specifically, when performing direct radiation measurements on materials released into unrestricted areas, the licensee failed to establish adequate representative background measurements and used background radiation levels that exceeded the radiation levels detected on the equipment being surveyed for release. As a result, the survey values were negative and the licensee could not evaluate the potential radiological hazard and released equipment from the restricted area without adequate surveys as required by the regulations.

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

Pursuant to the provisions of 10 CFR 2.201, Lost Creek ISR, LLC is thereby 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 the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to 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 previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an Order or Demand for Information may be issued requiring information 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 also provide a copy of your response, with the basis for your denial to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001, with a copy to the Regional Administrator, Region IV.

Your response 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, proprietary or safeguards information so that it can be made available to the public without redaction. If personal, privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in details 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). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Dated this 21 day of December 2016.

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-09068

License: SUA-1598

Report: 040-09068/2016-001

Licensee: Lost Creek ISR, LLC

Location: Lost Creek Project
Sweetwater County, Wyoming

Date: September 27-November 22, 2016

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

Inspectors: Martha Poston-Brown, Health Physicist
Nuclear Materials Safety Branch – A
Division of Nuclear Materials Safety

Kenneth R. Womack, Health Physicist
Division of Fuel Facility Inspection
Region II

Accompanied By: Alan Thompson, Project Geologist
State of Wyoming
Department of Environmental Quality
Land Quality Division

Approved By: Lee Brookhart, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Lost Creek ISR, Inc.
NRC Inspection Report 040-09068/16-001

This inspection included a review of management organization and control, site status, site tours, site operations, radiation protection, environmental protection, and radioactive waste management. The licensee was conducting operations in accordance with regulatory and license requirements, with four exceptions as described below.

Management Organization and Controls

- The organizational structure and staffing levels maintained by the licensee during the inspection period did not meet all the requirements specified in the license. One violation was identified for modification of the organizational chart and changing duties and responsibilities affecting the Environment, Health and Safety (EHS) organization, without submitting a request for licensed amendment to the NRC or evaluating the change through the Safety and Environmental Review Panel (SERP) process. (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 reporting requirements. (Section 1.2d)

In-Situ Leach Facilities

- Recovery operations were being conducted as required by the license. (Section 2.2a)
- One prior violation was closed for the failure to store 11.e(2) contaminated waste in accordance with the license application commitments. (Section 2.2b)
- One violation was identified by inspectors for the licensee's failure to secure from unauthorized removal or access licensed materials that were stored in controlled areas. (Section 2.2b)
- Gamma exposure readings in the plant were as expected and there were no unplanned contamination events. (Section 2.2b and c)

Radiation Protection

- Occupational exposures since the previous inspection were below the regulatory limits (Section 3.2a)
- One repeat violation was identified related to the failure of a worker to use a radiation work permit to enter the dryer area. (Section 3.2b)
- One violation was identified by inspectors related to the licensee's failure to perform adequate surveys related to the release of materials and equipment for unrestricted use. (Section 3.2c)
- The licensee's respiratory protection and training program were being conducted in accordance with regulations and license commitments. (Section 3.2d and e)
- Survey instruments were found to be in calibration and were being used appropriately by the licensee's staff. (Section 3.2f)

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

- The licensee completed a public dose assessment, and continued to implement environmental monitoring and excursion monitoring as required by the license. In addition, two previous notices of violation (NOV) were closed. (Section 4.2)

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

- The licensee was conducting transportation activities in accordance with the U.S. Department of Transportation and NRC requirements. (Section 5.2)

Report Details

Site Status

Lost Creek ISR, LLC (Lost Creek) received NRC authorization to begin full operations on October 3, 2013 (ML13276A588). At the time of this inspection, Lost Creek was extracting uranium using the in-situ recovery process. The Central Processing Plant (CPP) was in service and supporting operations of one mine unit (Mine Unit 1). Active uranium recovery was processing at 13 header houses (HH) with throughput of up to approximately 2500 gallons per minute (gpm) and an average throughput of 2,190 gpm since the last inspection. Both dryers are available for operation at the time of inspection. At the time of the inspection, deep disposal well (DDW) #1 was shut down and only DDW #3 and DDW #4 were in operation.

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 licensee's organization structure is illustrated in Figure 5.1-1 of the license application and its supplements are tied to the license under License Condition 9.2. License Condition 9.2 requires, in part, that the licensee conduct operations in accordance with the commitments, representations and statements contained in the license application and its supplements. The licensee is allowed under License Condition 9.4 to make changes in the facility, procedures and experiments without obtaining an amendment, provided these changes are reviewed by a Safety and Environmental Review Panel (SERP) and records of the changes are maintained.

Figure 5.1-1 is currently in Revision 3, which was revised via SERP in June of 2013. Contrary to the above, from March 2015 through September 2016, the licensee made changes to its organizational structure without using the SERP process or requesting an amendment to the license. Specifically, changes to the organization were made on December 11, 2015 and again on September 8, 2016. The December 2015 changes to the organization chart included, (1) movement of the Drill Supervisor Department Head position, so that this individual and his staff reported to the Chief Production Geologist; (2) elimination of the Mine Geologist Department Head and replacing that position with a Chief Production Geologist; (3) splitting the Project Engineer/Maintenance Supervisor Department Head position into a Project Engineer position and a Maintenance Foreman position, and; (4) elimination of the Site Supervisor Environment, Health Safety/Radiation Safety Officer (EHS/RSO) position and establishing an RSO position without any EHS Supervisory responsibilities. The September 2016 changes to the organization split the Wellfield Operations Superintendent Department head position into

two separate department head positions – Wellfield Operations Supervisor and Wellfield Construction Supervisor.

Additionally changes were made to the duties and responsibilities of the Site Supervisor EHS/RSO as described in Section 5.1.5 of the Technical Report. This section of the Technical Report assigned the Site Supervisor ESH/RSO with the responsibility for “developing and implementing safety and environmental programs, properly maintaining and retraining records, and assisting mine staff to comply with regulations and license conditions applicable to employee health protection.” This section also assigns this position the following duties:

- Designated site Quality Assurance/Quality Control (QA/QC) coordinator
- Reports to Manager ESH/Regulatory Affairs and Mine Manager, all matters regarding environmental protection and worker safety
- Conduct of training programs with regards to proper application of emergency response and environmental controls programs
- Inspects the facilities to verify compliance with applicable health and safety requirements and the QA/QC program
- Authorized to terminate immediately any activity that may be a threat to the employees, public health or the environment
- Responsible for routinely auditing all operational and monitoring procedures and the QA/QC program
- Assist Department Heads with the development and revisions of SOPs; and
- Maintain the Environmental, Health and Safety Management System (EHSMS) including SOPs in such a manner that all employees have access to the most recent information regarding all relevant facets of environment, health and safety.

The RSO position created as part of the December 2015 organizational change did not have any responsibilities associated with worker safety or environmental protection other than those intrinsically involved with radiation protection nor the additional duties bulleted above. This was confirmed during discussions with the current RSO.

The failure of the licensee to comply with License Condition 9.2 by making changes to the organization chart and the duties and responsibilities associated with the Site Supervisor EHS/RSO without requesting a license amendment or performing a SERP review as allowed by License Condition 9.4, was identified by inspectors as a violation (VIO 040-09068/2016001-01).

The inspectors reviewed the licensee’s organizational structure for Lost Creek operations and found it was not in agreement with the structure specified in the license application and its supplements as detailed above.

At the time of the inspection, the licensee had approximately 47 full-time employees at the mine site. This is a decrease of nine employees since the previous inspection. This decrease is the result of a reduction in force due to uranium prices. The inspectors determined that the licensee had sufficient staff for the work in progress.

b. Safety and Environmental Review Panel

License Condition 9.4 of the performance-based license requires, in part, that the licensee establish a SERP to evaluate if the program changes, tests or experiments require an NRC license amendment prior to implementation. The inspectors reviewed the following seven SERP evaluations performed by the licensee since the previous inspection.

1. SERP LC15-06, related to installation of a bird netting on the storage ponds.
2. SERP LC16-01, related to use of hose to discharge waste from the plant to the Storage Ponds in the event of freezing of underground waste water lines.
3. SERP LC16-02, related to a change in pattern for the Mine Unit 1 Baseline for 5 production zones (MP-114, MP-115, MP-116, MP-117 and MP-118). Additional wells were needed to establish a baseline for H₂O quality.
4. SERP LC16-03, related to installation of a small-scale filter press to filter wastewater.
5. SERP LC-16-04, related to test of expanding injection/production patterns in the wellfield by increasing the ratio of injections wells. [Wells 1I262P, 1P116, 1I235AP]
6. SERP LC16-05, related to the use of a filter bank in Header House 13 to determine the possible future use of such filters.
7. SERP LC16-06, related to rerouting of the venting of the permeate tank to prevent contamination of the tank if the elution tanks overflowed into the shared vent manifold.

The inspectors found that the licensee had implemented the SERP determinations for the above evaluations in accordance with the performance based License Conditions.

c. Audits and Inspections

The inspectors reviewed the audits and inspections being generated by the licensee in accordance with license condition (LC) 9.7, which states, in part, that the licensee shall follow the guidance in NRC Regulatory Guide 8.31. The RSO, Health Physics Technician (HPT), or one of the four designees were conducting and documenting a daily walk-through of all work and storage areas of all facilities to ensure good radiation practices were being followed. The RSO and Site Manager also performed a weekly walk-through of all plant areas to observe general radiation control practices. In addition, the RSO was generating a monthly report that summarized the results of the daily and weekly inspection, air monitoring, and radiation exposure data. The inspectors found that the audit and inspections met the requirement contained in the license.

The licensee had completed a Calendar Year (CY) 2015 annual audit of the radiation safety program. The findings of this audit were reviewed in the last inspection (040-09068/2015-002).

d. Additional Protocols

The inspectors verified that the licensee had provided the NRC with appropriate documentation to comply with 10 CFR 75.11, which related to the agreement between the United States of America and the International Atomic Energy Agency for the Application of Safeguards in the US. The licensee 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 15, 2016, for calendar year 2015.

1.3 Conclusions

The organizational structure and staffing levels maintained by the licensee during the inspection period did not meet all the requirements specified in the license. One violation was identified for modification of the organizational chart and changing duties and responsibilities affecting the Environment, Health and Safety (ESH) organization, without submitting a license amendment to the NRC or reviewing the changes through the Safety and Environmental Review Panel (SERP) process. The licensee's safety and environmental review evaluations were performed in accordance with the license requirements. The licensee was conducting audits and inspections as required by the regulatory requirement 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. Recovery Operations

Since the previous inspection in December of 2015, the licensee had brought online one additional header house (HH1-13). The licensee installed two ion exchange columns and two radium ion exchange tanks for restoration activities and were currently awaiting lab analysis and approval. The licensee had also started preparing for construction of Mine Unit 2 (MU-2). The daily average production rate is 2190 gallons per minute which is within the maximum average daily flow rate of 6000 gallons per minute, as required by LC 10.2.

The previous violation [040-09068/2015002-01, ML16007A102] associated with the failure to maintain inward hydraulic gradient in MU-1 was not addressed during this inspection and will be addressed in a future inspection.

b. Site Tours

The inspectors conducted tours of all the areas of the Central Processing Plant (CPP) and two of the header houses (HH1-1 and HH1-13). The inspectors observed environmental sampling at two sampling stations (HV-4 and HV-5). The inspectors also toured the waste disposal ponds and the 11.e(2) waste storage areas.

The licensee had two basic areas for the storage of 11.e(2) waste material: the interim storage areas in the CPP and a restricted area attached to the outside of the CPP. The 11.e(2) waste material is waste produced from the extraction of uranium from ore processed for its source material content. A previous violation was cited to the licensee for their failure to store 11.e(2) waste in accordance with the License Application; i.e. properly stored in closed containers inside the CPP interim storage areas. During the site tour, the inspectors noted the CPP 11.e(2) waste material was properly stored and the containers closed in accordance with the License Application. Additionally, the licensee revised their procedures and conducted the appropriate training on the securing of the waste. These actions were adequate to close the prior violation (040-09068/15002-02, ML16007A102).

The outside, restricted 11.e(2) storage area consisted of a fenced area attached to the CPP with roll off bins to contain the waste for later disposal. The typical content of the roll off bins were wellfield piping, pumps, housekeeping waste, etc. The waste's activity ranged from 100 Mega Becquerel (MBq) to 200 MBq (2.7milliCuries [mCi] – 5.4 mCi) of uranium and its associated daughter products. This area is normally accessed through a door in the building and from the outside of the building through a gate. This gate is normally secured with a chain and combination padlock. However, during a tour of the facility, the inspectors identified that personnel had accessed the restricted area (evident by material being staged for placement into the bins) and the padlock was in place but was not secured; i.e. the hasp was not engaged.

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

Contrary to the above, on September 27, 2016, the licensee failed to secure from unauthorized removal or access, licensed materials that are stored in controlled or unrestricted areas. This was identified as a violation of 10 CFR 20.1801 (VIO-040-09068/2016001-02).

The inspectors conducted independent radiological surveys of the gamma exposure rates present in the CPP, office buildings, and HHs. The surveys were conducted using a Ludlum Model 19 microRoentgen (μR) survey meter (NRC Serial #015544 calibration due July 13, 2017). Gamma exposure rates measured by the inspectors were as expected. The highest reading of 3500 $\mu\text{R}/\text{hr}$ was measured near the radwaste tanks.

The inspectors did not identify any areas that had not already been identified and posted as radiation areas by the licensee.

c. Contamination Control

The inspectors reviewed unplanned releases of source and byproduct materials that occurred since the previous inspection. The licensee tracked all radiation incidents and documented the appropriate information in accordance with LC 11.6. The inspectors verified that no unplanned contamination event occurred that met the recording, reporting, and inspection requirements of 10 CFR 40.60.

2.3 Conclusion

Recovery operations were being conducted as required by the license. One violation was closed associated with failure to store 11.e(2) waste in accordance with the license conditions. One violation was identified related to a failure to control access to radioactive material in storage. Gamma exposure readings were as expected in the plant and there were no unplanned contamination events.

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 the last quarter of 2015 and the first two quarters of 2016. Approximately 28 employees and contractors were monitored for external exposure using optical stimulated luminescence dosimeters that were exchanged on a quarterly basis. Occupationally monitored employees included plant, dryer, wellfield operators, maintenance staff, and health physics staff. The highest deep dose equivalent for the first two quarters of 2016 was a dryer operator that received 42 millirem (0.42 milliSievert).

The licensee conducted air sampling, in part, for assessment of internal exposures. The inspectors reviewed the licensee's radon-222 air sampling records and the uranium particulate and worker breathing zone sample results for the year-to-date (YTD). The highest derived airborne concentration in hours (DAC-hrs) YTD for radon daughters was 100.4 DAC-hrs received by four wellfield operators. The highest employee airborne uranium exposure YTD was 37.6 DAC-hrs for a dryer 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 were taken to ensure that the respiratory protection program and engineering controls for airborne uranium were being implemented appropriately. The

licensee submitted bioassays to an outside analytical laboratory, licensed by the NRC, for analysis. Samples were submitted on a weekly basis for plant and dryer operators and monthly for maintenance and wellfield workers. The inspectors reviewed the bioassay program to verify compliance with LC 9.7. Since the previous inspection in December 2015, no bioassay results exceeded the action level of 15 micrograms of uranium per liter of urine.

The licensee also monitored for soluble uranium intake in compliance with 10 CFR 20.1201(e). The highest YTD soluble uranium intake was calculated to be 3.5 milligrams of uranium in one week by a dryer operator. This was below the regulatory limit of 10 milligrams soluble uranium intake per week. The inspectors verified that the licensee's respiratory protection program was administered and conducted in accordance with established written procedures.

The highest YTD total effective dose equivalent was 261 millirem (2.61 milliSieverts) received by two wellfield workers. This was below the annual regulatory limit of 5000 millirem (50 milliSievert).

b. Radiation Work Permits

Section 9.7 of the license application requires, in part, that the licensee will require a Radiation Work Permit (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, 2016, and July 30, 2016, 34 RWPs were used by the licensee. The licensee's process for radiation work permit need/identification was documented in SOP-HP-001 Revision 2 dated February 19, 2015. This SOP required the responsible supervisor to identify the potential need for an RWP and to contact the RSO, who would generate the RWP. The inspectors reviewed the RWPs and noted that they included the appropriate personal protective equipment, respiratory protection, and air monitoring for the job described.

The inspectors also reviewed licensee identified items of non-compliance. The inspectors reviewed an event where a worker accessed the dryer without a radiation work permit. License Condition 10.4 states, in part, the licensee shall develop and implement written standard operating procedures (SOPs) for all operational activities involving radioactive and nonradioactive materials associated with licensed activities that are handled and processed. Standard Operating Procedure OPS-025, Revision 3, "Yellowcake Dryer Operation," Section 6.7 stated, in part, accessing the inside of the dryer requires a radiation work permit (RWP).

Contrary to, the above, on December 2, 2105, a dryer operator accessed the dryer to unplug the knife valve without obtaining a RWP. The inspector determined this was a repeat of a previously cited violation from an inspection conducted January 27-29, 2015 (ML15254A403), where two individuals failed to obtain an RWP prior to entering the dryer to unplug the knife valve. In accordance with Enforcement Policy Section 2.3.2.b.3, the violation was cited to the licensee (VIO-040-09068/2016001-03).

c. Radiation Surveys

License condition 9.2 requires, in part, that the licensee conduct operations in accordance with Section 5.7.2.2, revised April 2010 (ML102100263, ML102420249) of the license application and its supplements. This specifically required that the licensee perform quarterly gamma radiation surveys in approximately 46 areas throughout the CPP area to verify radiation postings and to assess external radiation conditions. At the time of the inspection, the inspectors determined that the licensee was conducting the gamma radiation surveys on a monthly basis.

A review of selected surveys for equipment released from the restricted area to the unrestricted area was performed. The inspectors found on multiple occasions from June 15, 2014, through September 28, 2016, that when the licensee was performing direct beta gamma radiation measurements on material released into unrestricted areas, the licensee used background survey measurements higher than the measurements on the equipment being released. For example, on a release survey conducted on August 16, 2016, the background beta gamma measurement recorded was 707 counts and the counts recorded for the item to be released were 661, 535, 436, and 610 counts, respectively. When applying the appropriate counting efficiencies and the survey area, the equipment release measurements were calculated to be -568, -2125, -3347, and -1054 disintegrations per 100 centimeter square (dpm/100cm²), respectively. The inspector noted on selected surveys that the beta gamma results ranged from -100 to -3347 dpm/100cm². A background measurement in excess of the equipment or material being surveyed indicates the background measurement is not representative and impacts the determination of radioactivity on or in the equipment or material. As the background measurements increase, more counting time is needed or a change in the survey location (lowering of the background) needs to be made in order to determine the radioactive quantity in or on material to be released. During the inspection, the inspector observed the licensee performing direct measurements on equipment to be released from the restricted area. The individual performing the survey, in order to establish a representative background radiation level, did not make adjustments to the sample count time or background conditions when the background measurements exceeded the measurements of the material being surveyed for release.

Title 10 CFR 20.1501 and 10 CFR 20.1301 require surveys (measurements or assessments) to determine the magnitude and extent of radiation levels, the potential hazard of radiation levels, and residual radioactivity detected on material released into unrestricted areas. Contrary to the above, on multiple occasions between June 15, 2014, and September 28, 2016, the licensee did not make surveys that were reasonable under the circumstances to evaluate the magnitude and extent of radiation levels, the potential hazard of radiation levels, and residual radioactivity detected on material released to unrestricted areas. Specifically, when performing direct radiation measurements on materials released into unrestricted areas, the licensee failed to establish adequate representative background measurements and used background survey data that exceeded the measurements made for the equipment being released. This was identified as a violation of NRC requirements (VIO-040-09068/2016001-04). The inspector reviewed additional survey data (direct alpha and contamination

measurements) and determined the licensee did not inappropriately release material from the restricted area such that a public dose was exceeded.

d. 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 included fit-testing of respirators for employees, inspection, 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. The inspectors noted that the licensee was not maintaining or using self-contained breathing apparatus (SCBA) respirators because of operational changes to less hazardous chemicals. Therefore, the inspectors did not include SCBA respirators during this inspection of the respiratory protection program.

e. Training

The licensee is required to conduct training in accordance with license Condition 9.7, RG 8.31 and Section 5.5 of the Technical Report, as committed to in its initial application and supplements, for its contractors and new employees and provide annual refresher training to current employees and contractors. The inspectors reviewed the employee training records with regard to health physics technical designees, transportation, and HAZMAT handling, respiratory protection and operator training. The inspectors reviewed the training program records and found them to be complete and in accordance with license requirements.

f. Radiation 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 found to be in calibration and were being used appropriately by the licensee's staff.

3.3 Conclusions

Occupational exposures since the last inspection were below regulatory limits. One repeat violation was identified related to the failure of a worker to use a radiation work permit to access the dryer area. One violation was identified related to the licensee's failure to perform adequate surveys related to the release of materials and equipment for unrestricted use. The licensee's respiratory protection and training program were being conducted in accordance with regulations and license commitments. Survey

instruments were found to be in calibration and were being used appropriately by the licensee's staff.

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. Dose to Members of the Public

The licensee performed a public dose assessment based on environmental monitoring results on April 15, 2016. This dose assessment stated that there have not been any ranchers, campers, hunters or other members of the general public spending any significant amount of time near the plant, so doses were calculated for a contractor employee spending less than a week onsite or the occasional delivery driver. Both doses were well below the allowable limit of 100 mrem/year or 2 mrem in any one hour.

b. Environmental Monitoring

The licensee had installed a monitoring ring for effluents around the entire MU-1 minefield. Each station is approximately 150 feet away from the next station. These locations and the stock ponds on the Bureau of Land Management property surrounding site were sampled and the water samples monitored for contamination on a quarterly basis.

The site also contained six air monitoring stations, surrounding the site. One of these monitoring stations (HV-1) was close to Baroil, Wyoming, a small community that is the closest occupied area near the site, located approximately 17 miles northeast of the CPP. Two of the six air sampling stations were visited by the inspectors. (Per the technical report there are five air sampling stations at Lost Creek and one at Lost Creek East). All six locations were sampled on a quarterly basis. Both air sampling stations were in fenced areas, with high volume (HV) air samplers, OSL, and passive radon monitors. The air filters from the air samples were collected and changed weekly, the OSL and radon monitors were exchanged quarterly. Filter exchanges for the two stations (HV-4 and HV-5) were observed and sample handling followed the appropriate protocols. HV-4 was located at the license boundary, approximately 2.5 miles downwind of the CPP. HV-5 was located upwind of the CPP and was one of two stations used to establish background.

Soil samples were collected at each of the five air monitoring stations associated with Lost Creek on an annual basis. Samples of vegetation are not collected under this environmental monitoring program.

As part of the radiation protection program assessment in 2015, the licensee conducted a long-term analysis of environmental monitoring data. This analysis included a review of the last 8 years' worth of air sampling data, the last 7 years of passive radon monitoring and passive gamma monitoring (OSL), and the last 3 years of soil sampling. Results of this analysis showed little to no impact from uranium mining and processing operations as the doses measured at HV-4 were comparable to the levels measured at HV-5 (background).

Based on this assessment of historical environmental monitoring data, the licensee is considering discontinuing monitoring at HV-1 (near Baroil) and HV-5 (one of the two background monitoring stations).

c. Wellfield and Excursion Monitoring

License condition 11.5 requires in part, that the licensee monitor groundwater at the designated monitoring wells twice a month. Since the previous inspection, no excursions have occurred. Only one spill was reported since the previous inspection. This spill was associated with the HH-10 vault which occurred on July 26, 2016. The license had initially estimated the released volume of production fluid as 11,000 gallons minus a recovered volume of 1200 gallons. Refined release volume was 13,650 gallons with a recovered volume of 1260 gallons. The leak was repaired and the area pumped out. A sample of released fluid indicated a concentration of 89.1 ppm of U_3O_8 . The leak was believed to be due to the failure of a fusion joint connecting pipe with a 90° fitting. This area was reviewed by the inspectors during a tour of the wellfields and found to be dry. The NRC determined that the licensee response and corrective actions taken due to the spill were appropriate for the circumstances.

d. Deep Disposal Wells

The licensee has three deep disposal wells (DDW) for the facility, DDW-1, DDW-3 and DDW-4. In January of 2016, the license had stopped injecting wastewater into DDW-1. The quarterly reports associated with the DDW were reviewed from December 2015 through June of 2016. These reports track average flowrate, average pressure, and maximum pressure. These reports also identify any exceedances, where pressure exceeded the maximum pressure. Two exceedances were identified in December of 2015. No exceedances were identified in the first quarter of 2016, 18 exceedances were identified in the second quarter of 2016. The licensee investigated the exceedances and determined the all but two of these were the result of pressure spikes due to closure of valves or flowmeter issues. The two exceedances that could not be tied to these two issues were determined after multiple testing to be of unknown origin. All documented pressure exceedances were temporary increases in pressure of short duration that were well within normal operational protocols.

5. Storage Ponds

In the previous inspection, the NRC identified a violation associated with failure to perform daily inspections of the two storage ponds as required by License Condition 10.8A. A second violation was identified related to failure to maintain the

minimum freeboard of three feet in the two storage ponds. The inspectors reviewed the licensee's corrective actions and the associated records demonstrating the completion of the daily inspections and the determination of minimum freeboard. The NRC inspectors found the licensee's corrective actions to be adequate. The previous two violations associated with the storage ponds were closed (040-09068/2015002-03 and 040-09068/2015002-04).

4.3 Conclusions

The licensee completed a public dose assessment, and continued to implement environmental monitoring and excursion monitoring as required by the license. In addition, two prior notices of violation (NOV) were closed.

5 Inspection of Transportation 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 in compliance with regulatory requirements.

5.2 Observations and Findings

The licensee ships yellowcake product to the Honeywell facility for conversion and 11.e(2) byproduct material waste to Pathfinder Shirley Basin. Since December 1, 2015, the licensee made 15 yellowcake shipments and 3 byproduct waste shipments. The inspectors reviewed the shipping records and found them to be complete and in accordance with the U.S. Department of Transportation and NRC regulations.

5.3 Conclusions

The licensee was transportation activities in accordance with the license and regulatory requirements.

6 Exit Meeting Summary

The NRC inspectors presented preliminary inspection results to Mr. Steve Hatten, Vice President of Operations, and members of the licensee's staff at the conclusion of the onsite inspection on September 29, 2016. The NRC continued its review and recharacterized several findings. A final exit was conducted with Mr. John Cash, Vice President of Regulatory Affairs Exploration and Geology, and members of the licensee's staff on November 22, 2016, and during a follow-up call on December 13, 2016. During the inspection, the licensee did not identify any information reviewed by the NRC inspectors as proprietary that was included in the report.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

Kurt Brown, Mine Manager
John Cash, Vice President, Regulatory Affairs
Mike Gaither, Manager, EHS/Regulatory Affairs
Steve Hatten, Vice President, Operations
Alex Hunt, Process Engineer/Plant Manager
Chris Pedersen, Radiation Safety Officer
Jim Phillips, EHS Sampler

INSPECTION PROCEDURES USED

IP88005	Management Organization and Controls
IP89001	In-Situ Leach Operations
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

ITEMS OPENED, CLOSED AND DISCUSSED

Open

040-09068/2016001-01	VIO	Failure to SERP Organizational & RSO duties changes
040-09068/2016001-02	VIO	Failure to secure 11.e(2) waste in storage
040-09068/2016001-03	VIO	Failure to obtain a RWP
040-09068/2016001-04	VIO	Inadequate surveys for free release

Closed

040-09068/2015002-02	VIO	Failure to store 11.e(2) waste IAW license
040-09068/2015002-03	VIO	Failure to perform daily storage pond inspections
040-09068/2015002-04	VIO	Failure to maintain 3 feet freeboard in storage ponds

Discussed

040-09068/2015002-01	VIO	Failure to maintain inward hydraulic gradient
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LIST OF ACRONYMS

ADAMS	NRC's Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
CPP	Central Processing Plant
CY	Calendar Year
DAC-hrs	Derived Air Concentration in hours
DDW	Deep Disposal Well
DOT	U. S. Department of Transportation
EHS	Environment, Health and Safety
EHSMS	Environmental, Health and Safety Management System
HH	Header House
HPT	Health Physics Technician
HV	High Volume
IP	NRC Inspection Procedure
ISR	In-Situ Recovery
MU	Mine Unit
NCV	Non-cited Violation
NIOSH	National Institute for Occupational Safety and Health
NOV	Notice of Violation
NRC	U.S. Nuclear Regulatory Commission
QA/QC	Quality Assurance/Quality Control
RG	NRC Regulatory Guide
RSO	Radiation Safety Officer
RWP	Radiation Work Permit
SERP	Safety and Environmental Review Panel
SOP	Standard Operating Procedure
μR	microRoentgen
VIO	Violation
YTD	Year to Date

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. 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 "Agency Rules of Practice," a copy of this letter, its enclosure(s), and your response, 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. Bernadette Baca, Health Physicist at (817) 200-1235, or the undersigned at (817) 200-1549.

Sincerely,

/RA/

Lee Brookhart, Chief
 Fuel Cycle and Decommissioning Branch
 Division of Nuclear Materials Safety

Docket: 040-09068
 License: SUA-1598

Enclosure:

1. Notice of Violation
2. Inspection Report 040-09068/2016-001

cc: S. Ramsay, Wyoming Office of Homeland Security
 M. Rogaczewski, Wyoming Department of Environmental Quality, Region III Supervisor
 R. Schierman, Wyoming Department of Environmental Quality, Land Quality Division
 N. Williams, Wyoming Department of Environmental Quality, Region II Supervisor

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Letter to John Cash from Lee Brookhart dated December 21, 2016

SUBJECT: NRC INSPECTION REPORT 040-09068/2016-001

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