



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

March 2, 2017

Mr. Michael Griffin, Vice President  
Permitting, Regulatory and  
Environmental Compliance  
Strata Energy, Inc.  
2929 New Haven Road  
Oshoto, WY 82721

SUBJECT: NRC INSPECTION REPORT 040-09091/2017-002 AND NOTICE OF  
VIOLATION

Dear Mr. Griffin:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted from January 31 through February 2, 2017, at your Ross Project in Crook County, Wyoming. The purpose of the inspection was to examine activities conducted under your license as they relate to public health and safety, and to confirm 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 at the conclusion of the onsite inspection on February 2, 2017.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation involves your failure to provide shipping papers for two return shipments of 11e.(2) byproduct material containers as required by NRC regulations. This violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at (<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.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 in the Notice because it was identified by the NRC during the inspection.

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 also 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 and Procedure," a copy of this letter, its enclosures, 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 Dr. Robert Evans, Senior Health Physicist, at 817-200-1234, or the undersigned at 817-200-1549.

Sincerely,

/RA/

Lee E. Brookhart, Chief  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety

Docket No: 040-09091

License No: SUA-1601

Enclosures:

1. Notice of Violation
2. NRC Inspection Report 040-09091/2017-002

cc:

Carol Bilbrough, Program Manager  
Mark Rogaczewski, District 3 Supervisor  
Scott W. Ramsay, Radiological Services Manager  
Ryan Schierman, Program Manager

NRC INSPECTION REPORT 040-09091/2017-002 AND NOTICE OF VIOLATION – DATED  
MARCH 2, 2017

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ADAMS ACCESSION NUMBER: **ML17054D527**

■ SUNSI Review By: RJE		ADAMS ■ Yes □ No		■ Publicly Available □ Non-Publicly Available		■ Non-Sensitive □ Sensitive	
OFFICE	RIV:DNMS:FCDB	FCDB		NMSS:DUWP	C:FCDB		
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DATE	3/2/17	3/2/17		3/2/17	3/2/17		

OFFICIAL RECORD COPY

## NOTICE OF VIOLATION

Strata Energy, Inc.  
Oshoto, Wyoming

Docket No. 040-09091  
License No. SUA-1601

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted on January 31 through February 2, 2017, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR 71.5(a) requires that a 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, comply with the applicable requirements of the regulations appropriate to the mode of transport of the Department of Transportation (DOT) in 49 CFR Parts 107, 171-180, and 390-397.

49 CFR 172.200(a) requires, with exceptions not applicable here, that each person who offers a hazardous material for transportation describe the hazardous material on the shipping paper in a manner required by Subpart C of 49 CFR Part 172. Pursuant to 49 CFR 171.8 and 172.101, radioactive material is classified as hazardous material.

Contrary to the above, the licensee offered a hazardous material for transportation but failed to describe the hazardous material on shipping papers in a manner required by Subpart C of 49 CFR Part 172. Specifically, on August 22 and November 16, 2016, the licensee, as the shipper, offered to its contract carrier a hazardous material that was shipped by highway in roll-off containers without shipping papers describing the hazardous material.

This is a Severity Level IV violation (Supplement 6.8).

Pursuant to the provisions of 10 CFR 2.201, Strata Energy Inc. is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, 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 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 within the time specified in this Notice, an order or a 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, United States 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 in 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 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 2<sup>nd</sup> day of March 2017

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket: 040-09091

License: SUA-1601

Report: 040-09091/17-002

Licensee: Strata Energy, Inc.

Location: Ross Project  
Crook County, Wyoming

Dates: January 31-February 2, 2017

Inspectors: Robert J. Evans, PhD, Senior Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety

Linda M. Gersey, Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety

John Saxton, Hydrogeologist  
Uranium Recovery Licensing Branch  
Division of Decommissioning, Uranium Recovery and Waste Programs  
Office of Nuclear Material Safety and Safeguards

Accompanied by: Alan Thompson, Project Geologist  
Uranium Recovery Program  
Land Quality Division  
Wyoming Department of Environmental Quality

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

Attachment: Supplemental Inspection Information

## **EXECUTIVE SUMMARY**

Strata Energy, Inc.  
NRC Inspection Report 040-09091/2017-002

This U.S. Nuclear Regulatory Commission (NRC) announced inspection included a review of site status, management organization and controls, site operations, radiation protection, environmental and effluent monitoring, transportation, and waste disposal operations.

### 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 conducted audits and inspections as required by regulatory and license requirements. (Section 1.2c)
- The licensee had appropriate financial surety in place. (Section 1.2d)
- The licensee submitted the appropriate documentation to comply with the Additional Protocol requirements. (Section 1.2e)

### In-Situ Leach Facilities

- Uranium recovery operations were conducted as required by the license and site procedures. (Section 2.2a)
- The licensee maintained plant parameters, site security, and radiological postings in accordance with procedure, license, and regulatory requirements. (Section 2.2b)

### Radiation Protection

- The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. Occupational exposures, for the first three quarters of 2016, were below regulatory limits. (Section 3.2a)
- Radiation work permits, routine surveys, conditionally released equipment, and free-release surveys met license and regulatory requirements. (Sections 3.2b and 3.2c)
- The licensee conducted radiological characterization of airborne samples in accordance with license requirements. (Section 3.2d)

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

- The licensee implemented the effluent, environmental, excursion monitoring, and spill reporting programs in accordance with license requirements. (Section 4.2)

Inspection of Transportation Activities and Radioactive Waste Management

- The licensee transported resins and waste disposal containers in accordance with regulatory requirements, with one exception. One violation was identified related to the licensee's failure to provide shipping papers for two return shipments of 11.e(2) byproduct material containers. (Section 5.2a)
- The licensee disposed of 11e.(2) wastes in accordance with its disposal agreement. (Section 5.2b)
- Wastewater operations were being conducted as required by the license. (Section 5.2c)



## **Report Details**

### **Site Status**

Strata Energy, Inc. (Strata) commenced with in-situ uranium recovery operations at the Ross Project in December 2015. Strata has been operating its uranium recovery operations continuously since the NRC's previous inspection in June 2016. Currently, Strata is extracting uranium from wellfields and processing the uranium-bearing lixiviant at its Central Processing Plant (CPP). Within the CPP, the licensee used ion exchange resin columns to strip the uranium from the lixiviant. The uranium-loaded resins were shipped off-site for further processing at a different NRC-licensed facility. Since the last inspection, Strata sent 32 shipments of resins off-site for further processing.

At the time of the inspection, Strata was extracting uranium from Mine Units 1 and 2. Six header houses were in service, and a seventh header house was under construction. Strata currently utilizes one surface impoundment (Pond 1) for the short-term storage of liquid 11e.(2) byproduct material prior to disposal in a deep disposal well. The flow rates to the deep disposal well since the previous inspection ranged from 12 to 19 gallons per minute (gpm).

## **1 Management Organization and Controls (88005)**

### **1.1 Inspection Scope**

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

### **1.2 Observations and Findings**

#### **a. Organizational Structure**

The inspectors reviewed the licensee's organizational structure for compliance with License Application Section 5.1 and Figure 5.1-1, referenced in License Condition (LC) 9.2. At the time of the inspection, Strata had approximately 40 full time onsite employees. All management-level positions were filled with qualified individuals. In addition, the licensee continued to use contractors for wellfield drilling work.

Since the previous inspection, the radiation safety officer (RSO) left the facility. The vice president of permitting, regulatory, and environmental compliance, assumed the position of RSO for an interim period of time. The licensee later hired a qualified contractor to provide site support as alternate RSO. The licensee subsequently hired a permanent RSO in January 2017. At the time of the onsite inspection, the vice president position was being filled by a qualified contractor on an interim basis.

Since the previous inspection, the former radiation safety technician (RST)-in-training fulfilled the education, training, and experience requirements, as outlined in NRC Regulatory Guide 8.31, to become a qualified RST. At the time of the inspection, the RST was working full time in the radiation protection program.

b. Safety and Environmental Review Panel

License Condition 9.4 requires, in part, that the licensee establish a Safety and Environmental Review Panel (SERP) to evaluate whether a program change, test, or experiment requires a license amendment prior to implementation. The inspectors reviewed the following eight SERP evaluations performed by the licensee since the previous inspection:

- SERP 15-12 dated April 29, 2015, related to minor revision of the license application regarding storage of solid 11e.(2) byproduct material
- SERP 16-05 dated June 8, 2016, related to approval of Header House 4 (HH-4) in Mine Unit 1
- SERP 16-06 dated August 24, 2016, related to approval of the qualifications for the RST
- SERP 16-07 dated September 27, 2016, related to a change in action levels for the pond groundwater monitoring program
- SERP 16-08 dated October 27, 2016, related to approval of HH-5 in Mine Unit 2; in addition, this SERP approved the use of air for hydrostatic testing and alternate material for header house basements
- SERP 16-09 dated November 1, 2016, related to approval of minor changes to the locations where the lixiviant complexing agent is added to the lixiviant; at the time of the inspection, the licensee was using a temporary bicarbonate tank at HH-5 for injection of the complexing agent into the wellfield during startup operations
- SERP 16-10 dated November 28, 2016, related to approval of a qualified contractor as alternate RSO; in addition, this SERP concluded that the RSO does not have to remain onsite full-time
- SERP 16-11 dated December 6, 2016, related to approval of HH-6 in Mine Unit 2

The inspectors found that the licensee had implemented the SERP review process, documented each conclusion, and appropriately determined that a license amendment was not needed for each of the above evaluations in accordance with LC 9.4.

The inspectors noted that the licensee had some editorial errors which included missing page changes in the 2015 annual SERP report. The licensee's staff agreed to provide the missing page changes for 2015 in the 2016 annual report.

c. Audits and Inspections

The inspectors reviewed the audits and inspections being conducted by the licensee in accordance with LC 9.7. Daily walk downs were required to be conducted by the RSO or RST or, in their absence, by a qualified designee, provided the RSO reviews the walk-down documentation within 3 hours of the start of the next workday. The inspectors reviewed walk-down documentation for May 2016 through January 2017. The

inspectors verified that the RSO or qualified RST reviewed the walk down documentation within the required time frame when performed by a qualified designee.

In addition to the daily walk-downs, the inspectors confirmed that the RSO and/or the RST conducted weekly walk downs with the Operations Manager and generated monthly reports containing evaluations of radiation safety activities in accordance with the program descriptions provided to the NRC.

At the time of the inspection, the annual As Low As Reasonably Achievable (ALARA) audit, as required by LC 11.2, had not been completed. The licensee stated that they anticipate that the report would be completed and submitted with the semi-annual effluent and environmental monitoring report that was due at the end of February 2017.

The inspectors verified that an annual review of standard operating procedures was conducted, as required by License Application Section 5.2.1.

The inspectors also verified that the licensee was conducting the operational inspections of the retention pond in accordance with LC 10.8. At the time of the inspection, two of three pond cells were in service. The inspectors toured the pond cells, reviewed records, and interviewed operations staff. The records indicated that the licensee repaired the pond liner in December 2016 due to damage caused by a forklift in October 2016. The records also indicated that no liner leak had been detected since startup of the facility. The licensee's staff demonstrated how they conducted the daily pond leak detection checks, and the inspectors concluded that the daily checks were being conducted in accordance with procedural requirements.

Finally, the inspectors confirmed that the quarterly and annual pond inspections were being conducted as required by LC 10.8. The quarterly and annual inspection results were included as attachments to the licensee's semi-annual report for the first half of 2016 (ML16246A015). The annual pond inspection was conducted in May 2016, and the licensee concluded that no significant stability or erosion problems existed, although some minor surface erosion was identified for future repairs.

d. Financial Surety

The inspectors verified that operations conducted since the previous inspection were consistent with the approved annual update for the surety cost estimates. The inspectors verified that the licensee had submitted the annual update for 2017 in a timely manner, which is currently being reviewed by the NRC headquarters office.

e. Additional Protocol Verification

The inspectors verified that the licensee had provided the NRC with appropriate documentation to comply with the requirements of 10 CFR 75.11, which related to the agreement between the U.S. and the International Atomic Energy Agency for the application of safeguards in the U.S. The licensee presented three of the necessary forms that provide contact information, capacity of yellowcake production, and actual annual yellowcake production. The licensee also explained how it collected the information for reporting. The inspectors concluded that the reports for 2016-2017 were accurate, complete, and consistent with the Additional Protocol reporting requirements.

### 1.3 Conclusions

The organizational structure and staffing levels maintained by the licensee during the inspection period met the requirements specified in the license and were sufficient for the work in progress. The licensee's safety and environmental review evaluations were performed in accordance with license requirements. The licensee conducted audits and inspections as required by regulatory and license requirements. The licensee had appropriate financial surety in place. The licensee submitted the appropriate documentation to comply with the Additional Protocol 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 regulatory requirements and the license.

### 2.2 Observation and Findings

#### a. Recovery Operations

Since the previous inspection in June 2016, the licensee placed header houses HH-5 and HH-6 into service in Mine Unit 2. The start date and number of wells for each header house are as follows:

<u>Header House</u>	<u>Start Date</u>	<u>No. Recovery Wells</u>	<u>No. Injection Wells</u>
5	December 27, 2016	26	47
6	February 3, 2017	N/A	N/A

The daily production for the facility since the previous inspection ranged between 1,541 and 2,200 gpm, which is less than the maximum average daily flow rate of 7,500 gpm as stipulated in LC 10.2. In accordance with LC 10.1, the lixiviant consisted of native groundwater, carbon dioxide, sodium bicarbonate, and oxygen.

In Section 3.1.4 of the License Application (referenced in LC 9.2), the licensee committed to maintain a production bleed between 0.50-2.00 percent, with an average of 1.25 percent. Since the previous inspection, the daily bleed varied between -1.1 and 3.2 percent of the daily production rate. The long-term daily production bleed during this period was approximately 0.75 percent of the daily production rate. The inspectors inquired about the negative bleed which occurred during September 3-5, 2016. Strata staff explained that, for the Ross Project facility, the production process included augmenting the bicarbonate addition to the lixiviant at each header house, and the negative bleed resulted from Strata's error in calculating/verifying the bleed at the time of injection. The error was attributed the licensee's failure to perform the bleed rate calculation in a timely manner. Strata reported the negative bleed in its 2016 third quarter report to the NRC dated October 19, 2016 (ML16300A269). The inspectors concluded this event had a low safety impact since the short-term negative bleed did not appreciably affect Strat's ability to maintain an inward hydraulic gradient in Mine Unit 1.

The inspectors reviewed the records for daily pressures on the injection and recovery manifolds since the previous inspection. The daily pressures were below the maximum

of 140 pounds per square inch except for one day, December 27, 2016. On that day, the reported pressure reached a maximum of 305 pounds per square inch. Strata staff stated that this pressure measurement was not attributed to an actual manifold pressure but was caused by a frozen pressure gauge connection.

The inspectors reviewed the mechanical integrity test records for wells tested since the previous inspection. The licensee reported that 392 wells were tested of which 391 wells passed and only one well failed initial testing. The well that initially failed the mechanical integrity test was scheduled to be re-worked and re-tested. Based on these reported numbers, the failure rate was determined to be exceptionally low.

The average daily discharge rate to the deep disposal well since the previous inspection varied between 12 and 19 gpm, consistent with the design of the deep disposal well and the reported long term daily production bleed rate (0.75 percent of 2,000 gpm).

c. Site Tours

The inspectors conducted tours of the CPP, selected header houses, retention pond, 11e.(2) storage areas, and deep disposal well house. At the time of the site tour, the facility throughput ranged from 1,800-1,900 gpm. Operations staff reported that the throughput flow rate would most likely increase to approximately 2,000 gpm when header house HH-6 is placed into full service. These throughputs remained well below the licensed limit of 7,500 gpm.

The inspectors toured the CPP and discussed status of systems with the plant operators. The inspectors noted that the licensee had developed detailed check lists to record plant parameters on a daily basis, in addition to the computer-recorded parameters. The inspectors reviewed selected daily check lists and confirmed that the licensee was maintaining these records.

The inspectors conducted walk-downs of two systems, the deep disposal well and the retention pond, and compared the as-found conditions to procedure requirements. In summary, the licensee was operating the plant systems in accordance with procedural requirements. The deep disposal well flow rate remained below the administrative limit of 60 gpm. The retention pond cell water levels were well below the freeboard limit. The inspectors reported several minor procedure enhancements to the licensee for correction.

The inspectors measured the gamma radiation exposure rates throughout the facility using a Ludlum microRoentgen survey meter (NRC No. 015518, calibration due date of July 13, 2017, calibrated to radium-226). With outdoor background levels ranging from 12-15 microRoentgen per hour ( $\mu\text{R/hr}$ ), the exposure rates within the CPP averaged about 50  $\mu\text{R/hr}$ . The highest exposure rate, 350  $\mu\text{R/hr}$ , was observed at the surfaces of the transfer water tank and transfer water decant tank. The trash dumpster, located outdoors in a secured area, ranged from 30-50  $\mu\text{R/hr}$  on the surface of the dumpster. The measurements within the header houses ranged from 12 (background levels) to 220  $\mu\text{R/hr}$ . The highest exposure rates within the header houses were observed on contact with the sock filter banks. All exposure rates at the Ross Project were less than 2 millirem per hour (2,000  $\mu\text{R/hr}$ ), the licensed limit for restricting access to the areas.

During site tours, the inspectors observed radiation protection postings and site security. Radiological postings were in place at facility entrances. As noted above, no area met the definition of a radiation area. Site security included locked entries into the CPP, header houses, fenced area around the retention pond, and the 11e.(2) waste storage area. The inspectors confirmed that the licensee was maintaining control of the restricted areas in accordance with license and regulatory requirements.

## 2.3 Conclusions

Uranium recovery operations were conducted as required by the license and site procedures. The licensee maintained plant parameters, site security, and radiological postings in accordance with procedure, license, and regulatory requirements.

## 3 **Radiation Protection (83822)**

### 3.1 Inspection Scope

Determine whether the licensee's radiation protection program was being conducted in compliance with the 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 first three quarters of calendar year 2016. (The fourth quarter dosimetry reports were not available at the time of the inspection.) Forty-two employees were monitored for external exposures using optically stimulated luminescence dosimeters that were exchanged on a quarterly basis. During 2016, occupationally monitored employees included plant and wellfield operators, radiation safety staff, and maintenance workers. Based on the available records, the individual with the highest external occupational dose for the first three quarters of 2016 was a CPP/wellfield operator. This individual had an assigned dose of 17 millirem.

The licensee conducted air sampling as part of its program for internal dose assessments. The inspectors reviewed the licensee's radon-222 progeny and uranium particulate air sampling records for the first three quarters of 2016. The RSO used these air sampling results to assign internal doses to personnel. The highest dose assigned over this period was 74.94 millirem to a well swabber.

The inspectors reviewed the total effective dose equivalent (summation of the external and internal doses) to employees for the first three quarters of 2016. The highest total effective dose equivalent exposure for the first three quarters of 2016 was 81.9 millirem, a dose assigned to a well swabber. This assigned dose was well below the regulatory limit of 5 rem (5,000 millirem) per year.

Urine bioassays were collected on a routine basis to verify the adequacy of the occupational air monitoring program. Since the previous inspection, no urine bioassays exceeded the administration limit of 15 micrograms of uranium per liter of urine.

The inspectors noted that the licensee changed the number of occupationally monitored employees starting January 1, 2017. The licensee made these changes as allowed by regulation 10 CFR 20.1502. These changes will be evaluated during a future inspection.

b. Radiation Work Permits

Per LC 10.4, the licensee is required to use radiation work permits (RWPs) for non-routine activities not covered in a standard operating procedure. During the previous inspection, the inspectors noted that the RWP documentation did not require signatures for the employees working under the RWP. At that time, the inspectors discussed standard industry practice of having workers sign the RWP to acknowledge the radiation safety requirements for the work to be performed. The licensee updated the RWP form and procedures, and trained employees on the changes.

Since the previous inspection, the licensee issued two RWPs related to performing an analysis on a yellowcake sample in the lab and replacing a recovery manifold. The inspectors noted that both RWPs had new sections for employee signatures. Overall, these RWPs provided the instructions necessary to help control worker exposures to radioactive materials.

c. Radiation Protection Surveys

The inspectors reviewed the licensee's routine contamination and gamma radiation surveys. The licensee conducted weekly removable contamination surveys in designated clean areas of the facility, such as lunch rooms and office areas. Monthly gamma radiation surveys were conducted in the CPP and header houses. Monthly contamination spot checks were conducted for clean trash and the washer and dryer. Quarterly spot checks were conducted on workers and vehicles. The inspectors verified that the routine surveys were being conducted and documented as required. No widespread contamination problems or radiation areas were identified by the licensee during these routine surveys.

The inspectors verified that the licensee's contamination control procedure included all commitments made by the licensee in the license application and subsequent license amendments. Potentially contaminated items that are moved from restricted area to restricted area, but never leave the licensee's controlled area (for example, movement of tools from restricted area to restricted area) were handled under the conditional release program. This conditional release program included methods to prevent the spread of contamination. The inspectors interviewed several CPP and wellfield operators about the conditional release program. The interviews confirmed that the operators demonstrated adequate knowledge of the requirements related to the additional release program.

The inspectors reviewed a representative sample of free release surveys to ensure compliance with LC 9.6 requirements. The records indicated that the release surveys were performed as required to ensure that alpha, beta, and gamma levels were below the action limits.

d. Radiological Characterization of Airborne Samples

License Condition 10.16 requires the licensee to conduct radiological characterization of airborne samples for natural uranium, thorium-230, radium-226, polonium-210, and lead-210 for each restricted area air particulate sampling location at a frequency of once every six months for the first two years and annually thereafter. The licensee's sample results for 2016 were reviewed during the onsite inspection.

The licensee collected and analyzed these samples quarterly. The results for the first half of 2016 were reviewed during the inspection. The licensee collected the samples from three locations within the CPP and averaged the concentrations for the two quarters. The licensee's analysis of the sample results were documented in a Memo to File dated September 6, 2016.

As documented in the Memo to File, the sample results indicate that lead-210 accounts for 78 percent of the total activity, while polonium-210 accounts for about 14 percent of the total activity. The remainder of the radionuclides individually account for less than 3 percent of the total activity. Based on these results, and in accordance with 10 CFR 20.1204(g) requirements, the RSO concluded that some of the radionuclides can be disregarded when determining dose. The licensee concluded that the dose calculation would include the gross alpha sample results and the annual limit of intake associated with lead-210. This calculation would be used to determine the committed effective dose equivalent to site personnel.

The inspectors identified several discrepancies with the RSO's analysis. For dose assessments, the licensee's spreadsheet used the annual limit of intake associated with polonium-210 and natural uranium (solubility class W) instead of lead-210 (the more limiting byproduct and 78 percent of the total activity). The current RSO and acting vice president were unable to explain why the previous RSO conducted dose assessments using polonium-210 and how these conclusions affected the licensee's programs. The RSO and acting vice president agreed to review and revise the Memo to file prior to assigning dose to workers for calendar year 2016. The licensee's implementation of LC 10.16 requirements will be reviewed during a future inspection.

3.3 Conclusions

The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. Occupational exposures, for the first three quarters of 2016, were below regulatory limits. Radiation work permits, routine surveys, conditionally released equipment, and free-release surveys met license and regulatory requirements. The licensee conducted radiological characterization of airborne samples in accordance with license requirements.

**4 Effluent Control and Environmental Protection; 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

The effluent and environmental monitoring programs and reporting requirements are specified in LCs 9.2, 9.10, 10.4(B), 10.9, 11.1(D), 11.2, 11.5, and 12.7. The environmental monitoring program included airborne particulates, radon, direct gamma radiation, surface water, soil, and sediment sampling. Sampling of food and vegetation was not specifically required. The results of the licensee's sampling are presented in semiannual reports to the NRC. The inspectors reviewed the semi-annual report for the first half of 2016 (ML16246A015) and interviewed site staff. The licensee utilized six sample stations including a background and nearest resident station. In addition, the license required the licensee to collect certain samples from the CPP, header houses, and wellfield as part of the environmental and effluent monitoring program.

In summary, the licensee collected and reported all sample results from the six sampling stations. The licensee collected additional samples from within and around the plant as required by the license, but the licensee did not present all of this data in the semi-annual report for the first half of 2016. The missing data included the results of plant perimeter monitoring. Licensee representatives indicated that they would review the report for the first half of 2016 to identify any missing data and would present any missing information in the second half report. This finding was not safety significant because the licensee used information for the entire year to conduct public dose assessments. The report for the second half of the year, with the public dose assessment for 2016, is expected to be submitted to the NRC by the end of February 2017.

As part of the effluent monitoring program, the licensee analyzed the production and injection fluid for radon concentrations. The inspectors confirmed that the licensee had collected these samples in 2016, but as documented in 6.2.1 of the semi-annual report for the first half of 2016, the licensee recognized that the sampling protocols in use at that time may have resulted in erroneous results. The licensee implemented a revised sampling program in mid-2016. The inspectors reviewed the licensee's collection of these radon-in-water samples during the inspection. The inspectors questioned whether the licensee's procedural requirements and the implementation of the procedure would ensure consistent and reliable sample results. Licensee staff agreed to review the procedure and sampling methodology. This program area will be reviewed during a future inspection, to ensure that the licensee's collection and analysis methods resulted in consistent and reliable information.

### b. Wellfield and Excursion Monitoring

The inspectors reviewed data collected under the licensee's excursion monitoring program for 2016. License Condition 11.5 requires, in part, that the licensee monitor groundwater at the designated monitoring wells twice a month. Since the previous inspection, the licensee implemented the excursion monitoring program in accordance with the established program. No wells were determined to have been on excursion status since the previous inspection.

Five spills of process material had occurred since the previous inspection, three of which met the threshold for reporting to the State of Wyoming (i.e., volume greater than 420

gallons or the spill enters a waterway); none of the spills met the NRC's threshold for reporting. The three spills occurred on July 19, October 5, and October 11, 2016. The three spills were reported to the NRC in accordance with LC 11.6 requirements. The spills did not pose a hazard and did not require soil excavation.

The inspectors reviewed the monitoring of private wells within 2 kilometers of the perimeter well rings for the active mine units as required by LC 12.3. Of the 27 groundwater rights identified by the inspectors within this area, Strata was sampling groundwater at 14 private wells and provided a suitable explanation (e.g., not functioning, no longer existing) for not sampling the remaining 13 other water rights.

#### 4.3 Conclusions

The licensee implemented the effluent, environmental, excursion monitoring, and spill reporting programs in accordance with license requirements.

### 5 **Inspection of Transportation Activities; 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 conducted in compliance with the 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 used a contractor as its carrier. A contract trucking firm's tractor, combined with a Strata-owned tanker trailer, was routinely used by the licensee to transport uranium-loaded resin from the CPP to another NRC-licensed facility for further processing by eluting and stripping the uranium from the resin. The eluted resin is then returned Strata using the same truck and tanker trailer.

Since the previous inspection in June 2016, the licensee made 32 resin shipments. The inspectors reviewed the shipping papers and found them to include the pertinent information required by NRC and U.S. Department of Transportation (DOT) regulations. Paperwork for the return shipment of stripped resins to the Strata CPP was reviewed and found to be adequate.

The licensee also shipped 11e.(2) byproduct solid waste to an NRC-licensed disposal site. A contractor was also used as the carrier for these exclusive-use shipments. After the roll-off container was emptied at the disposal site, the container was shipped back to the Strata site. In this situation, the licensee (Strata Energy) was also the shipper for the return shipment of the emptied container. The inspectors noted that the licensee had appropriate shipping papers in accordance with NRC and DOT requirements for the full shipment leaving the Strata facility to the disposal site. However, there were no shipping papers for the return shipments of the container. The inspectors found that the returned waste shipments contained residual quantities of licensed 11e.(2) byproduct material. These shipments were transported on August 22 and November 16, 2016, without the

required shipping papers. This finding is a violation of 10 CFR 71.5(a), 49 CFR 171.8, 49 CFR 172.101, and 49 CFR 172.200(a) requirements (VIO 040-9091/1702-01). In response to the inspectors' findings, the licensee indicated that it would revise the shipment procedures, specifically the return shipment instructions, such that the shipments will be consistent with NRC and DOT requirements.

b. Solid Byproduct Waste Agreement

License Condition 9.9 requires, in part, that the licensee possess a waste disposal agreement to dispose of 11e.(2) byproduct material at an offsite location. The inspectors reviewed the waste agreement between Strata and the NRC-licensed disposal site and found it to be current and in compliance with license requirements.

Prior to shipment, the licensee stored the waste 11e.(2) byproduct material in a covered roll-off container inside a fenced restricted area adjacent to the CPP. The inspectors noted that the fence was secured with a lock and was appropriately posted.

c. Wastewater Treatment Activities

The licensee does not release liquids directly into the environment during routine operations. Releases are made only through a pathway that has been approved by the NRC. Liquid effluents are processed through reverse osmosis units, stored in the retention pond, or disposed via deep disposal well.

At the time of the inspection, the daily injection rate to the deep disposal well was approximately 19 gpm. Routine reports of wastewater disposal are presented to the State of Wyoming. The licensee did not report any issues with disposal of the wastewater during the inspection period.

The inspectors reviewed the licensee's daily, weekly, and monthly wastewater reports. The reports were complete in a timely manner and contained the information required by LC 10.8 such as freeboard levels. The inspectors observed the licensee's staff measure the leak detection levels beneath the pond cell liners. The inspectors also conducted a walk down of the deep disposal well equipment. The inspectors determined that the licensee continued to operate the equipment in accordance with site procedures.

The inspectors were also shown summary tables of the flows for the diversion up-gradient of the containment barrier wall and the underdrains for the pond dewatering system. The maximum daily flows since the previous inspection were under 3 gpm for both the diversion and underdrain discharges. These daily flows were consistent with those anticipated in the designs for these systems.

5.3 Conclusions

The licensee transported resins and waste disposal containers in accordance with regulatory requirements, with one exception. One violation was identified related to the licensee's failure to provide shipping papers for two return shipments of 11e.(2) byproduct material containers. The licensee disposed of 11e.(2) wastes in accordance with its disposal agreement. Wastewater operations were being conducted as required by the license.

## **6      Exit Meeting Summary**

The inspectors presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on February 2, 2017. Representatives of the licensee acknowledged the findings as presented. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary.

## **SUPPLEMENTAL INSPECTION INFORMATION**

### **Partial List of Persons Contacted**

J. Durand, Production Superintendent  
J. Fajgl, Vice President, Operations  
C. Harless, Radiation Safety Technician  
W. Kearney, Alternate RSO  
R. Knode, Chief Executive Officer  
C. Massie, Safety and Environmental Coordinator  
R. Pond, Manager, Health, Safety & Environment/RSO  
B. Schiffer, Geologist, WWC Engineering

### **Inspection Procedures Used**

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

### **Items Opened, Closed, and Discussed**

#### **Opened**

040-09091/1702-01   VIO   Failures to have required shipping papers

#### **Closed**

None

#### **Discussed**

None

### **List of Acronyms Used**

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
CPP	Central Processing Plant
DOT	U.S. Department of Transportation
gpm	gallons per minute
HH	header houses
IP	NRC Inspection Procedure
LC	License Condition
μR/hr	microRoentgens per hour
NRC	U.S. Nuclear Regulatory Commission
RSO	Radiation Safety Officer
RST	Radiation Safety Technician
RWP	radiation work permit
SERP	Safety and Environmental Review Panel
VIO	violation