



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

July 8, 2016

Mr. Michael Griffin, Vice President
Permitting, Regulatory and
Environmental Compliance
Strata Energy, Inc.
P.O. Box 2318
Gillette, WY 82717-2318

SUBJECT: STRATA ENERGY, INC. - NRC INSPECTION REPORT 040-09091/2016-001

Dear Mr. Griffin:

The U.S. Nuclear Regulatory Commission (NRC) conducted a routine team inspection at your Ross ISR Project in Crook County, Wyoming, on June 7 – 9, 2016. 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, tours of the uranium recovery facilities, environmental monitoring locations, and interviews with personnel. At the conclusion of the inspection, the inspection findings were discussed with you at the exit on June 9, 2016.

In accordance with Title 10 *Code of Federal Regulations* 2.390 (10 CFR 2.390) of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC 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.

M. Griffin

- 2 -

Should you have any questions concerning this inspection, please contact Ms. Bernadette Baca, Health Physicist, at 817-200-1235, or the undersigned at 817-200-1197.

Sincerely,

/RA/

Jack E. Whitten, Chief
Fuel Cycle & Decommissioning Branch
Division of Nuclear Materials Safety

Docket No: 040-09091

License No: SUA-1601

Enclosure:

Inspection Report 040-09091/2016-001

w/Attachment: Supplemental Information

cc:

Carol Bilbrough, Program Manager

Mark Rogaczewski, District 3 Supervisor

Scott W. Ramsay, Radiological Services Manager

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-09091

License: SUA-1601

Report: 040-09091/2016-001

Licensee: Strata Energy, Inc.

Location: Ross ISR Project
Crook County, Wyoming

Dates: June 7 – 9, 2016

Inspectors: Bernadette Baca, Team Leader, Health Physicist
Fuel Cycle & Decommissioning Branch
Division of Nuclear Materials Safety

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Uranium Recovery Licensing Branch, Division of Decommissioning,
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Approved by: Jack E. Whitten
Chief, Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

This unannounced team inspection included a review of site status, site tours, management organization and controls, site operations, radiation protection, excursion monitoring, environmental and effluent monitoring, transportation, waste disposal, and emergency preparedness.

Management Organization and Controls

- The organizational structure and staffing levels maintained by the licensee during the inspection period met the requirements specified in the license and were sufficient for the work in progress. (Section 1.2a)
- The licensee's safety and environmental review evaluations were performed in accordance with license requirements. (Section 1.2b)
- The licensee was conducting audits and inspections as required by the regulatory requirements and the license. (Section 1.2c)
- The licensee had appropriate financial surety in place. (Section 1.2d)

In-Situ Leach Facilities

- Recovery operations were being conducted as required by the license. (Section 2.2a)
- The licensee was maintaining an inward gradient as required by the license. (Section 2.2b)
- Gamma exposure readings in the plant were as expected. (Section 2.2c)
- Radiation work permits were not consistently implemented in accordance with licensee procedures. (Section 3.2b)
- Radiation surveys, instrument calibration, and respiratory protection were conducted in accordance with regulatory and license commitments. (Section 3.2c, d & e)
- The licensee conducted training as required by regulation and the license. (Section 3.2f)

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

- The licensee implemented the environmental monitoring program in accordance with license requirements. (Section 4.2a)
- The licensee implemented the excursion monitoring and spill reporting in accordance with the license requirements. (Section 4.2c)

Inspection of Transportation Activities and Radioactive Waste Management

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

Emergency Preparedness

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

Report Details

Site Status

Strata Energy, Inc. (Strata) received the Nuclear Regulatory Commission's (NRC's) authorization on November 30, 2015 (see Agencywide Documents Access and Management System (ADAMS) No. ML15334A308) to begin operations allowing activities up to the uranium loaded resin production. Since the start of uranium recovery operations in November, Strata had been extracting uranium using the in-situ recovery process. However, due to a recent rupture in the large incoming trunk pipe at the Central Processing Plant (CPP), the extraction process had been curtailed the week before the inspector arrived on site for the initial inspection. The extraction process resumed during the inspection and the inspectors observed the repairs and modifications including a flexible rubber piping collar to the main incoming trunk line to the CPP. In addition to the CPP processing of uranium laden resins, the supporting operations included uranium recovery activities in the first mine unit, Mine Unit 1 (MU-1). At the time of the inspection, active uranium recovery was proceeding at four header houses (HH) with a throughput of up to approximately 2,500 gallons of fluid per minute. The activities that have occurred since the startup of operations include eight shipments of uranium-laden resins for off-site processing to yellowcake. At the time of the inspection, one deep disposal well was in operation as well as one waste water treatment cell (Cell 3) of surface impoundment Pond 1.

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 organizational structure of the licensee's Ross ISR Project facility for compliance with License Application Section 5.1 and Figure 5.1-1. At the time of the inspection, Strata had approximately 40 full time onsite employees which included 7 new employees and a long term contractor. In addition, the licensee has eight contracted drilling rig crews manned by three workers each.

The Radiation Safety Officer (RSO) has not changed and one member of operations staff has been identified as a Radiation Safety Technician (RST)-in-training; his time is split evenly between radiation safety and uranium recovery operations serving as an operator.

b. Safety and Environmental Review Panel

License Condition 9.4 of the performance-based license requires, in part, that the licensee establish a Safety and Environmental Review Panel (SERP) to evaluate whether or not a program change, test, or experiment require a license amendment prior

to implementation. The inspectors reviewed the following six SERP evaluations performed by the licensee since the previous inspection.

SERP 15-19, dated December 2, 2015, related to plant ventilation and air sampling as well as vegetation, animal, and soil sampling.

SERP 15-20, dated December 2, 2015, related to approval of HH-1 in MU-1.

SERP 16-1, dated January 26, 2016, related to approval of HH-2 in MU-1 and temporary filtration devices in the header houses.

SERP 16-2, dated March 13, 2016, related to piping modification for back flushing.

SERP 16-3, dated April 14, 2016, related to approval of HH-3 in MU-1.

SERP 16-4, dated May 11, 2016, related to change in frequency of the wellhead inspections.

The inspectors found that the licensee had implemented the SERP review and determination that a license amendment was not needed for each of the above evaluations in accordance with the performance based license.

c. Audits and Inspections

The inspectors reviewed the audits and inspections being generated by the licensee in accordance with License Condition 9.7. Daily walk downs are 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. Walk down documentation from startup in December 2015 to May 2016 were reviewed. Several examples were initially identified and then later resolved of the RSO not reviewing the walk down documentation. One of these initial examples included the RSO's review of a walk down performed by a designee, the RST-in-training who is a fully qualified uranium recover facility operator and imminently familiar with the CPP. The RSO indicated he thought the license condition allowed the RST-in-training to perform the walk down without his review because of his previous position as a full-time uranium recovery operator. Discussions with licensing staff at NRC Headquarters indicated the license condition was not intended to allow the RST-in-training to conduct the walk downs without an RSO review. However, the RSO had reviewed all walk-down documentation weekly and monthly when conducting the RSO's radiation safety reviews. When discussing walk-down assessment with the RSO, the inspectors concluded that Strata's designated documentation for walk-down was at incomplete without the RSO written acknowledgement; however, further review by the inspectors confirmed that other written documentation available provided by Strata for review confirmed that the walk-down activities had been performed and there were no safety significant items identified during this inspection interval. Strata management was cautioned, although a review within the week was conducted, the RSO or RST was required by License Condition 9.7 to review a daily walk down by any designee are to be reviewed by the RSO or RST, not a RST- in training. Strata defines a designee in its applications as Designated Qualified Operator. The inspectors informed the licensee that, although the RST-in training, is a

fully qualified uranium recovery operator and imminently familiar with the CPP equipment and other supporting operations, as a designee on paper he was not a fully qualified as an RST. The licensee indicated that this was a misunderstanding and an element of confusion on their part. Had he not be a fully qualified uranium recovery operator imminently familiar with the CPP, he would not have be excluded from the daily review procedures, this was an oversight on their part. The documentation for all walk-downs will be reviewed during the next inspection to ensure compliance with the requirement for the designee to be reviewed within the allotted time frame specified in the license.

In addition to the daily walk downs, radiation safety staff (RSO and RST-in-training) conduct weekly and monthly evaluations of radiation safety activities in accordance with the program descriptions provided to the NRC. An outside consultant utilized by Strata conducted an annual ALARA audit of the radiation safety program, as well as an audit of the Industrial Safety and Emergency Preparedness programs. These respective audits reports were reviewed by the inspectors and determined to be adequate. When issues were identified by the outside consultant, Strata staff took immediate corrective action to resolve and closeout the issues identified, and made the necessary revisions to their training program and its emergency operating procedures. The annual radiation safety ALARA audit dated April 1, 2016, covered operation for the calendar year 2015 through March 2016.

d. Financial Surety

The inspectors verified the operations conducted since the previous inspection are consistent with the established cost estimates for the financial surety instrument. The approved 2015 surety specified a limitation on the injection to the first two header houses in MU-1 until the 2016 surety update was put in place. Strata submitted the 2016 surety update on December 4, 2015 (ML15344A022) and supplemental data on March 11, 2016 (ML16099A115). The 2016 surety update was approved by NRC staff on June 14, 2016, as License Amendment 5 (ML16126A293).

The surety includes costs for decommissioning and reclamation of operations up to and including four header houses in MU-1 and three header houses in MU-2.

1.3 Conclusions

The organizational structure and staffing levels maintained by the licensee during the inspection period met the requirements specified in the license and were sufficient for the work in progress. The licensee's safety and environmental review evaluations were performed in accordance with license requirements. The licensee was conducting audits and inspections as required by the regulatory requirements and the license with the exception of a documentation issue that was misunderstood by the licensee's management and staff. The licensee had appropriate financial surety in place.

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 January 2015, the licensee had brought online HH-1 through HH-4, in MU-1. 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>
1	December 2, 2015	29	50
2	February 12, 2016	30	50
3	May 16, 2016	30	50
4	June 7, 2016	17	30

The daily production for the facility since the start of operations on December 2, 2015, was between 0 and 1,550 gallons per minute, which is within the maximum average daily flow rate of 7,500 gallons per minute, as authorized by License Condition 10.2. The inspectors review daily flow rates and determined that there were a number of days with zero daily production had occurred from April 18, 2016, and between June 1, 2016, and June 7, 2016. (see Section 2.2.b. below)

The measured daily bleed rate since the previous inspection was confirmed to be between 0.5 and 5.69 percent of the daily production rate. For several days in April 2016 following a rupture in the piping, the instrumentation used to record the bleed was affected by that rupture and the recorded bleed was determined by the licensee to be in error. Based on other information provided by the licensee, the inspectors were able to establish that the bleed during that time was approximately 5 percent. The daily bleed was slightly higher than the range of 0.5 to 2.0 percent listed in the approve license application on approximately 30 days. Because the production rate was less than 20 percent of the maximum permit rate, the higher bleed rate had no impact on the design of the operation (i.e., waste water disposal). The inspectors determined that the bleed rates were in compliance with License Condition 10.7. (see Section 2.2.b. below)

The inspectors reviewed the mechanical integrity test (MIT) records for wells since the previous inspection. The licensee reported that 250 wells were tested of which 241 wells passed and 9 wells failed their initial testing. The nine wells that initially failed were re-worked and passed subsequent testing. The failure rate was determined by the licensee to be approximately 4 percent, which is in line with the MIT failure rate for the industry.

The maximum daily discharge rate to the deep disposal well since the previous inspection was 43,162 gallons per day (30 gallons per minute). The average daily

discharge rate was approximately 7.5 gallons per minute. The discharges are consistent with the design in the approved license application.

b. Inward Gradient

License Condition 10.7, requires the licensee to maintain an inward gradient at a wellfield starting with the first injection of lixiviant until the initiation of the stabilization period following restoration of that wellfield. This requirement is satisfied during the production and restoration periods by maintaining a daily bleed as well as monitoring water levels at the perimeter monitoring wells.

Since the previous inspection, the licensee had two periods during which the production and bleed was curtailed. The first was an approximately 24-hour period due to a rupture in the piping on April 18, 2016, caused by a pressure spike in the system (ML16109A347 and ML16174A043). The inspectors determined that the inward gradient requirement was met because the licensee had taken appropriate corrective actions to repair the equipment, and that residual drawdown in the wellfield maintained the inward gradient during the relatively short duration of the event.

The second event was identified by the licensee to the inspectors on June 7, 2016, during the inspection. During the entrance meeting, the licensee noted that the plant was not operating because repairs had not been completed on a piping rupture occurring on June 1, 2016. The licensee stated that no production had occurred since the rupture and that repairs were expected to be completed by the afternoon of June 7, 2016, after which production would resume. Production was resumed by the evening of June 7, 2016.

The inspectors expressed the NRC's expectation that the licensee would notify the NRC Project Manager for any such disruption in production resulting in the lack of an inward gradient. The licensee did notify the NRC Project Manager of the rupture and related spill but the notifications failed to document the lack of production (ML16159A051 and ML16165A418). This oversight was discussed in detail with the Strata management.

The inspectors explained to the RSO and Strata management that the lack of production for this extended period did not satisfy the requirement for maintaining an inward gradient. The licensee explained that the residual drawdown may have maintained the inward gradient and its consultant provided an analysis of a bleed demonstrating it would take a minimum of 833 days for water to travel 100 feet for an excursion to occur based on a request from the licensee following the event on April 18, 2016. In the follow-up report to NRC, the licensee also included a summary of its consultant's conclusion (see ML16174A043).

The inspectors informed the licensee that 833 days without a bleed would be unacceptable to fulfill License Condition 10.7 because: (1) it is based on theoretical calculations; (2) the primary groundwater protection standard is the inward gradient and the groundwater detection program is the secondary groundwater protection standard (analogous to the liner being the primary standard and groundwater being the secondary standard; see 10 CFR Part 40 Appendix A Criterion 5) and the dependency on the secondary standard over the primary standard is contrary to good engineering practices;

(3) should the lack of an inward gradient afford the migration of fluids outside of the wellfield, the licensee would be in violation of 10 CFR 40.41(c) and, at a minimum, would be required to establish corrective actions and increase the surety to cover costs for such corrective actions.

During the inspection, the licensee proposed obtaining additional data which demonstrated that the residual drawdown maintained an inward gradient. The licensee obtained water elevation data from selected production wells along a cross-section of the wellfield prior to the resumption of the production. The water elevation data demonstrated residual drawdown to the satisfaction of the inspectors. Furthermore, the inspectors independently compared the licensee's measured water elevation to the static elevations reported in the MU-1 Wellfield Data Package. That comparison established that the residual drawdown for several of the most interior wells was 14 to 16 feet, which is consistent with a residual drawdown.

Based on an analysis of this additional data, the inspectors were assured that the inward gradient requirement was maintained.

c. Site Tours

The inspectors conducted tours of all areas in the CPP, HH-3 and HH-4 as well as selected well heads in MU-1, the retention pond, 11e(2) storage areas, and the meteorological tower and environmental monitoring stations. The inspectors did not tour the deep disposal well house.

On the first day of inspection, the licensee did not have any active production underway due to a rupture in the gasket on a flange connecting the major trunk pipeline into the plant. The licensee and inspectors toured the work area where the repairs were occurring. The licensee was awaiting replacement equipment to complete the repairs and the repairs were completed by the evening of June 7, 2016. The plant was operating during the remainder of the inspection.

The primary production for most of the inspection time period had been from HH-1 through HH-3. During the inspection, the licensee was completing the final connection to HH-4. By the end of the inspection, the licensee was circulating fluids through HH-1 through HH-4.

The inspectors toured the retention pond area, and determined that the licensee was using only Cell 3 of Pond 1 for storage of byproduct material and fluids from swabbing activity conducted at the injection wells. The water levels in Cell 3 were well below the minimum freeboard level with a thickness of approximately 3 feet. Water, also at shallow thicknesses was observed in Cells 1 and 2; however, the licensee stated that the fluids in Cells 1 and 2 were solely from precipitation.

The inspectors noted activities in MU-2 which included several drill rigs and baseline sampling of the monitoring wells being performed by a contractor for the licensee.

The inspectors observed plant equipment, radiation protection postings, and site security. Site security included locked entries into the CPP, header houses and the

fenced areas around the ponds, meteorological tower/environmental monitoring station and the 11e(2) waste storage area. Plant equipment and house keeping was in good condition, radiological posting were in place and site security was adequate. The inspectors confirmed that the licensee was maintaining control of the restricted areas and equipment in accordance with the license and regulatory requirements.

The inspectors conducted independent radiological surveys of the gamma exposure rates present in the CPP, office building, 11e(2) waste storage area and header houses. The surveys were conducted using a Ludlum Model 19 microRoentgen meter (NRC 015546 calibration due date of August 12, 2016). Gamma exposure rates measured by the inspectors were as expected. Background readings of 10 micro Roentgen per hour were found outside the CPP. The highest gamma exposure reading of 70 micro Roentgen per hour was measure in HH 3. The inspectors did not identify any areas that had not already been identified and posted as a radiation area by the licensee.

The inspectors reviewed the facility for any process or facility changes not reviewed by a SERP. The inspectors did not identify any changes requiring a SERP.

2.3 Conclusions

Recovery operations were being conducted as required by the license. One potential noncompliance of License Condition 10.7 was identified related for a failure to demonstrate inward hydraulic gradient in MU-1; however, this issue was resolved to the inspector's satisfaction with additional licensee information being provided. Gamma exposure readings in the plant were as expected.

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 since start-up in December 2015 through March 2016, since dosimetry records from April 2106 forward were not available. Thirty eight employees are monitored for external exposure using optically stimulated luminescence dosimeters exchanged on a quarterly basis. Occupationally monitored employees include operators in the CPP, wellfield operators, radiation safety staff, and maintenance workers. The maximum exposed individual for the period reviewed was a CPP operator with an assigned dose of 4 millirem.

The licensee conducted air sampling, as part of its program for internal dose assessment. The inspectors reviewed the licensee's radon-222 air sampling records and the uranium particulate air sampling records since start-up. The RSO uses these air sampling results to assign internal dose to personnel. Internal doses were assigned to

personnel in December 2015 January and February of 2016. The highest dose assigned over this period was 1.4 millirem to a CPP operator.

Urine bioassays were taken to establish a baseline bioassay measurement as the licensee also plans to assign dose based on positive bioassay results. According to Procedure F.5, three or more quality control samples are submitted with each routine batch of bioassay (urine) samples. A minimum set includes an uncontaminated blank, and two spiked samples (10 to 20 micrograms per liter and 40 to 60 micrograms per liter). The RSO is notified if sample results are above 5 micrograms per liter, per Procedure F.4. The bioassay monitoring information was reviewed but no individuals were assigned a dose as all bioassays, other than the deliberate spikes, were reported at or below the level minimum of detection. No issues or items of concern were identified. The bioassay program requires sampling of at least 50 percent of the operations staff, a member of radiation safety and at least one member of the administrative/management staff per month. The RSO tracks bioassay sampling to ensure that each member of the operations staff is monitored at least once over the two month period.

b. Radiation Work Permits

The licensee is required to develop and implement written standard operating procedures and non-routine activities be documented in a specific radiation work permit. (RWP)

The Strata Radiation Protection Plan, Section D.11.5 states, in part, that "all workers involved in the job must have access to, read and sign the RWP requirements." The 17 RWPs generated since start-up were reviewed. Eight of the RWPs reviewed involved work by more than one individual. Only one of the eight RWPs was signed by the individuals performing the work. The other seven RWPs were only signed by the RSO and the Operations Superintendent. Both the RSO and the Operations Superintendent indicated they were not aware of the requirements for each individual performing the work to sign the RWP. Each believed that there were responsible since the RWPs were issued to them individually by the RSO. When the RWPs were discussed with the Operations Superintendent, the RSO and Operations Superintendent reconstructed the information to identify the specific individuals who worked under each RWP. This item will be reviewed in a subsequent inspection. Strata management plan to revise the RWP, RWP procedures, and provide training for activities conducted under the RWP program.

c. Radiation Protection Surveys

The inspectors reviewed the licensee's procedures and practices for the release equipment with surface contamination, materials, or packages for unrestricted use in accordance with License Condition 9.6.

Survey records for release of equipment, material and or packages to unrestricted areas were reviewed, and while several survey records dated April 25, 2016, and April 26, 2016, were completed by the RST-in-training, discussions with the RSO, reveal that

these surveys were conducted under the direct supervision and in the physical presence of the RSO.

Monthly surveys performed by the RSO include solid waste contamination surveys, trash surveys and surface contamination surveys. Removable contamination surveys for 24 individual sites in the CPP and administrative building were performed weekly. These survey records were reviewed by the inspectors and determined to be adequate.

d. Radiation Safety Instrumentation

The inspectors reviewed the licensee's operability, calibration and maintenance records for survey instruments in accordance with License Condition 10.15. Instruments reviewed were found to be in calibration. The licensee, when survey instruments require calibration, intends to use on offsite vendor to perform annual calibration for radiation safety instrumentation. The inspectors observed survey meters being used by licensee personnel when exiting restricted areas. The survey meters examined by the inspectors were found to be in calibration and were used appropriately by licensee's staff. A survey records review performed by the inspectors indicated that the RSO routinely reviews the survey records generated by employees exiting the restricted areas on a quarterly basis. This RSO's review includes direct observations of 5-6 individuals performing exit surveys when exiting the CPP.

e. Radiological Characterization

License Condition 10.16 requires the licensee to conduct radiological characterization of airborne samples for natural U, Th-230, Ra-226, Po-210 and Pb-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. At the time of the inspection, this activity had not been completed by the licensee based on their limited time of operation. Compliance with this license condition would not be expected at this time due to the licensee's limited operations.

f. Training

The licensee is required to conduct training in accordance with License Condition 9.7 and Regulatory Guide 8.31 for its contractors and new employees, and provide annual refresher training for its current employees. The inspectors reviewed the training records and determined that the documents meet the license and regulatory requirements.

The inspector reviewed the radiological and safety training for 41 licensee employees and 1 long-term contractor. Since the last inspection, 9 new employees received prompt radiological and safety training and 16 employees performing duties related to the U.S. Department of Transportation (DOT) hazardous materials shipping had completed the DOT training within the past three years, in accordance with the requirements of 49 CFR 172.702. All annual and refresher radiation safety training activities and records were found to be in accordance with license requirements.

g. Respiratory Protection

The inspectors examined the respiratory protection equipment and reviewed the licensee's procedures for respiratory protection and respirator maintenance. All respirators at the facility are National Institute for Occupational Safety and Health (NIOSH) certified and the respirators examined were in "like new" condition. The licensee currently has only two NIOSH respirators onsite. These respiratory are used infrequently; therefore, having such a limited quantity meets the sites current needs. After use, the RSO disassembles each respirator, cleans and sterilizes the components, checks each component for wear and tear, performs a radiological survey and wipe test and then packages the respirator up for future use. Limited spare parts are available in the radiation safety lab located on the second floor of the CPP. The inspectors reviewed the respirator use, cleaning, surveys and fit testing records and found the respiratory protection program to meet the license and regulatory requirements.

3.3 Conclusions

The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. Occupational exposures, from start up through the dates of the inspection, were below the regulatory limits. One follow-up item involving the RWP procedure was identified and will be reviewed during the next inspection. Radiological characterization of the site in order to demonstrate compliance with License Condition 10.16 had not been completed at the site. Training, instrumentation, radiation monitoring and respiratory protection and respirator maintenance met license and regulatory requirements.

4. Effluent Control and Environmental Protection and Maintaining Effluents from Materials Facilities ALARA (87102 and 88045)

4.1 Inspection Scope

Determine if the environmental and effluent monitoring programs are adequate to monitor the impacts of site activities on the local environment.

4.2 Observations and Findings

a. Environmental Monitoring

The effluent and environmental monitoring program and reporting requirements are specified in License Condition 9.2 (Application Sections 2.9.2, 4.1, 4.2, 5.7), 9.10, 10.4(B), 10.9, 11.1(D), 11.2, 11.5, and 12.7. The environmental monitoring program includes radon, airborne particulate, gamma radiation, surface water, soil, and sediment sampling. The results of the licensee's sampling are presented in semiannual reports to the NRC. The inspectors reviewed the July – December semiannual report and interviewed site staff. Since the start of operations in early December, there was insufficient time remaining in calendar year 2015 to obtain representative effluent samples (e.g., track-etch devices are normally deployed for a full calendar quarter) and December radon in-water samples were not representative due to start-up conditions (low plant flow, gas in the line, etc.). Strata will provide its first full reporting of effluent

quantities in the January – June 2016 semi-annual report. In addition, the inspectors reviewed a selected sample of the licensee's six environmental air sampler and eight radon sampler locations and selected groundwater and surface water sampling locations. The licensee is not currently operating a yellowcake dryer; therefore, the predominant effluent monitored is radon.

In a letter dated March 1, 2015, Strata described its method to estimate air effluent quantities of radon from the CPP by sampling lixiviant and measuring radon in water to establish both the quantity per unit time of radon entering the CPP in the pregnant lixiviant (i.e., radon in water) and the quantity per unit time of radon exiting the CPP in barren lixiviant. Differences in radon concentrations between the pregnant lixiviant and the barren lixiviant are attributed to radon losses through air effluent. The procedure for obtaining a representative sample of the pregnant and barren lixiviant was demonstrated by the licensee as the inspectors observed. At the time of this inspection, the licensee was evaluating preliminary results obtained from implementing this procedure. At the time of the inspection, the final sampling procedure and data analyses were not completed, so compliance with License Condition 12.7 could not be reviewed and assessed by the inspectors. Additional information from the licensee is expected in its next semi-annual environment and semi-annual report.

In summary, the inspectors concluded that the licensee had implemented the environmental monitoring program in accordance with license requirements.

b. Dose to Members of the Public

Uranium recovery operations at Strata began in December 2015; therefore, the licensee has not collected enough data to determine the annual public dose to members of the public. This item will be reviewed when sufficient data is collected to determine the annual dose to members of the public.

c. Wellfield and Excursion Monitoring

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

License Condition 11.6 states, in part, the licensee shall maintain documentation of unplanned releases of source or byproduct materials and process chemicals, including soil sample results (if taken), and provides requirements for reporting any production area excursions and spills. Four spills were identified by the licensee to have occurred on the following dates: March 3 2016, April 29, 2016, May 28, 2016, and June 2, 2016. Two of the spills were of sufficient volume to be reportable to the State of Wyoming and consequently are required to be reported to the NRC in accordance with requirements of License Condition 11.6. The inspectors selected two spills for detailed review, March 3, 2016, and June 1, 2016. The inspectors reviewed the spill reports, sample results, and physically walked down portions of the spill areas. The licensee reported the unplanned

releases in accordance with License Condition 11.6 and performed appropriate soil sampling.

The inspectors discussed the extent of the area for MU-2 which was currently in development and being sampled for baseline. The licensee's staff indicated the area is within the approved license application delineated and within the extent of the approved aquifer exemption area.

4.3 Conclusions

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

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 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 pre-operational inspection. A contract trucking firm's tractor, combined with a Strata's tanker trailer, is routinely used by the licensee to transport uranium loaded resin from the Strata CPP to the Uranium One Irigaray site for processing by eluting and stripping the uranium from the resin. The eluted resin is then returned from the Irigaray site to Strata using the same tractor truck and tanker trailer. Since the pre-operational inspection the licensee has made eight shipments to Irigaray. The inspectors reviewed the tanker trailer shipping papers and found them to include the pertinent information required by the DOT regulations. Return shipment paperwork from Irigaray to Strata CPP garage for the tanker trailer was also reviewed and found to be adequate.

The tanker trailer is appropriately posted and stocked with appropriate equipment for emergency response. The licensee uses a trucking contractor for the shipping, and coordinates the schedule with the company to ensure weather and other potential issues are addressed before a shipment is authorized to leave the facility. The licensee provided the appropriate level of radiation safety training and emergency response training to the driver.

b. Solid Byproduct Waste

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 Shirley Basin. The

licensee had not made a shipment of solid byproduct waste to Shirley Basin at the time of the inspection; however, the licensee planned to make a shipment in the near future.

The licensee stores the 11e(2) byproduct material in storage container with a top inside a restricted area (fenced) adjacent to the CPP. The fence was secured with a lock and 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 effluent is processed through reverse osmosis units, stored in a storage pond, or disposed to a deep disposal well. Land application is authorized but currently not being used.

At the time of the inspection, the daily injection rate to the deep disposal well was approximately 7.5 gallons per minute. The licensee did not report any issues with disposal of the wastewater during the inspection period. The maximum daily flow rate since the previous inspection was 43,162 gallons.

The inspectors reviewed the licensee's waste water daily, weekly, and monthly inspection reports. The inspections reports were complete and contained the required information such as freeboard and leak detection required by License Condition 10.8. The inspectors observed the licensee's staff measure the leak detection and sample on the groundwater monitoring wells for a pond. The inspectors determined that the licensee had operated the ponds and completed wastewater treatment activities in accordance with the license.

The inspectors were also shown the totalizers for the (1) diversion up-gradient of the containment barrier wall and (2) Cell 3 underdrain for the pond dewatering system. The totalizers were reportedly installed on May 23, 2016, and the reading during the inspection (June 7, 2016) was 22,240 and 10,670 gallons for the totalizer at the diversion and Cell 3 dewatering underdrain, respectively.

The licensee staff stated the meters will be installed on Cell 1 and 2 in the near future.

5.3 Conclusions

The licensee was conducting solid waste storage and waste water treatment in accordance with license and regulatory requirements. The licensee has procedures and a waste disposal agreement in place for the 11e(2) disposal. Strata operating procedures are available for the shipment of solid byproduct waste meeting the requirements of the license. The licensee was conducting resin shipments in accordance with DOT and NRC requirements.

6. Emergency Preparedness (88050)

6.1 Inspection Scope

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

6.2 Observations and Findings

The inspectors reviewed the licensee's established procedures for responding to and reporting emergencies, non-routine spills, and transportation incidents. The licensee established agreements with local emergency response agencies, including the fire department, local law enforcement agencies, and hospital. The inspectors reviewed the latest onsite table top emergency drill involving local authorities, the trucking contractor transporting the uranium loaded resins to the Uranium One Irigaray site for processing, and the review of action items and assignments resulting from lessons learned from the December 2015 emergency table top exercise. The inspectors also reviewed the licensee's program for site security, including the use of locked gates, fences, and cameras.

Based on this review it was determined that the licensee has been implementing an emergency response program consistent with its license conditions and operating procedures.

6.3 Conclusion

The licensee was implementing an emergency response program consistent with its license conditions and operating procedures.

7. Exit Meeting Summary

The inspectors presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on June 7, 2016. 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 INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Durand, Production Superintendent
J. Fajge, Vice President, Operations
M. Griffin, Vice President, Permitting, Regulatory and Environmental Compliance
C. Massie, Safety and Environmental Coordinator
N. Roche, Radiation Safety Officer

ITEMS OPENED, CLOSED, AND DISCUSSED

Open None
Closed None
Discussed None

INSPECTION PROCEDURES USED

IP 88005 Management Organization and Controls
IP 89001 In-Situ Leach Facilities
IP 83822 Radiation Protection
IP 88045 Effluent Control and Environmental Protection
IP 87102 Maintaining Effluents from Materials Facilities ALARA
IP 86740 Inspection of Transportation Activities
IP 88035 Radioactive Waste Management
IP 88050 Emergency Preparedness

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 Department of Transportation
HH header houses
HPT Health Physics Technician
IP NRC Inspection Procedure
LC License Condition
MIT Mechanical Integrity Test
MU-1 Mine Unit 1
NIOSH National Institute for Occupational Safety and Health
NRC U.S. Nuclear Regulatory Commission
RSO Radiation Safety Officer
RST Radiation Safety Technician
SERP Safety and Environmental Review Panel
SOP Standard Operating Procedure
Strata Strata Energy, Inc.

M. Griffin

- 2 -

Should you have any questions concerning this inspection, please contact Ms. Bernadette Baca, Health Physicist, at 817-200-1235.

Sincerely,

/RA/

Jack E. Whitten, Chief
Fuel Cycle & Decommissioning Branch
Division of Nuclear Materials Safety

Docket No: 040-09091

License No: SUA-1601

Enclosure:

Inspection Report 040-09091/2016-001
w/Attachment: Supplemental Information

cc:

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

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- 3 -

Letter to Michael Griffin from Jack Whitten dated July 8, 2016

SUBJECT: STRATA ENERGY, INC. - NRC INSPECTION REPORT 040-09091/2016-001

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