



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

January 5, 2016

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

SUBJECT: NRC INSPECTION REPORT 040-09091/15-001

Dear Mr. Griffin:

The U.S. Nuclear Regulatory Commission (NRC) conducted a preoperational team inspection at your Ross ISR Project in Crook County, Wyoming, on October 14, November 2-5, and November 22-24, 2015. Pursuant to License Condition 12.6 of Materials License SUA-1601, the purpose of the inspection was to confirm that written operating procedures and approved radiation safety and environmental monitoring programs were in place and to verify that preoperational testing was complete.

During the inspection, the NRC staff examined 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 with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The inspection findings were discussed with you and other members of your staff during the inspection. A final exit briefing was held with you and your staff at the conclusion of the onsite inspection on November 24, 2015.

Overall, the inspection team determined that your facility and staff were ready to commence with in-situ uranium recovery operations. Authorization for limited startup of the facility was granted to Strata Energy by NRC letter dated November 30, 2015 (ADAMS Accession Number ML15334A308). The NRC granted Strata Energy authorization to operate the wellfield injection and production circuits, ion exchange columns, and water disposal systems. You were also given authorization to begin transporting uranium-loaded resins for offsite processing. Details about the NRC's onsite inspection of the facility, site programs, and staffing are provided in the enclosed inspection report.

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

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Should you have any questions concerning this inspection, please contact Ms. Linda Gersey, Health Physicist, at 817-200-1299, or Dr. Robert Evans, Senior Health Physicist, at 817-200-1234.

Sincerely,

/RA R. Browder for/

Ray L. Kellar, P.E., Chief
Fuel Cycle & Decommissioning Branch
Division of Nuclear Materials Safety

Docket No.: 040-09091

License No.: SUA-1601

Enclosure:

NRC Inspection Report 040-09091/15-001

cc: Carol Bilbrough, WDEQ
Mark Rogaczewski, WDEQ
Director, Wyoming Radiation Control Program

Should you have any questions concerning this inspection, please contact Ms. Linda Gersey, Health Physicist, at 817-200-1299, or Dr. Robert Evans, Senior Health Physicist, at 817-200-1234.

Sincerely,

/RA R. Browder for/

Ray L. Kellar, P.E., Chief
 Fuel Cycle & Decommissioning Branch
 Division of Nuclear Materials Safety

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

Enclosure:
 NRC Inspection Report 040-09091/15-001

cc: Carol Bilbrough, WDEQ
 Mark Rogaczewski, WDEQ
 Director, Wyoming Radiation Control Program

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- R. Browder, FCDB
- B. VonTill, NMSS/DUWP/URLB
- J. Saxton, NMSS/DUWP/URLB

ML16005A631

ADAMS ACCESSION NUMBER:

<input checked="" type="checkbox"/> SUNSI Review By: RJE	ADAMS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive	
OFFICE	RIV:DNMS:FCDB	FCDB	NMSS:DUWP	C:FCDB
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DATE	12/29/15	12/31/15	12/30/15	12/5/16

OFFICIAL RECORD COPY

Service List

Carol Bilbrough, Program Manager
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Cheyenne, WY 82002

Mark Rogaczewski, District 3 Supervisor
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2100 West 5th Street
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Scott W. Ramsay, Radiological Services Manager
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Cheyenne, WY 82002

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-09091

License: SUA-1601

Report: 040-09091/15-001

Licensee: Strata Energy, Inc.

Location: Ross ISR Project
Crook County, Wyoming

Dates: October 14, 2015
November 2-5, 2015
November 22-24, 2015

Inspectors: Robert Evans, Ph.D., P.E., C.H.P., Team Leader
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: Ray L. Kellar, P. E., Chief
Fuel Cycle & Decommissioning Branch
Division of Nuclear Materials Safety

Approved by: Ray L. Kellar, P. E., Chief
Fuel Cycle & Decommissioning Branch
Division of Nuclear Materials

Attachments: Supplemental Inspection Information
Strata Energy Preoperational Inspection Field Notes

EXECUTIVE SUMMARY

Strata Energy, Inc.
U.S. Nuclear Regulatory Commission (NRC) Inspection Report 040-09091/15-001

An announced, team inspection was conducted at the Ross in situ recovery (ISR) Project in Crook County, Wyoming to determine if Strata Energy, Inc. (Strata Energy, the licensee) was prepared to commence with operations involving possession, use, storage and transportation of radioactive material as authorized by NRC Source and Byproduct Materials License SUA-1601. License SUA-1601 was issued to Strata Energy in April 2014 following NRC approval of the Ross License Application. The regulations in 10 CFR 40.32(c) state, in part, that an application for a specific license will be approved if the applicant's proposed equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property. Because the plant was not constructed at the time of the application approval, the purpose of this inspection was to determine whether or not the licensee had constructed the plant, established support programs, developed operating procedures, and trained site workers as described in the application. This requirement was enumerated as License Condition 12.6. The NRC team conducted the inspection, in part, to fulfill the requirements of License Condition 12.6.

In summary, the inspectors find the licensee ready to commence with limited in-situ uranium recovery operations as described below. The licensee established programs and procedures, constructed and tested plant equipment, and trained personnel as necessary to operate the plant in a manner that should be protective of workers, the public, and the environment.

Site Status

The licensee constructed the Ross ISR central processing plant up to the ion exchange columns including systems and equipment for production and injection water, waste water disposal, and resin transportation. Accordingly, the plant was ready to produce uranium-loaded resins. The licensee plans to ship the uranium-loaded resins to a nearby mill, another NRC-licensed site, for further processing. At this time, the licensee had not constructed the elution, precipitation, and drying circuits.

One header house in the first wellfield (Mine Unit 1) was in service at the time of the inspection. For the first year of operations, the licensee is permitted to use up to two header house (of four total) in Mine Unit 1. The licensee was pumping water through system piping, in part, to ensure that no leaks were present. The licensee implemented a program for maintaining a net inward hydraulic gradient in the operating wellfield as required by License Condition 10.7.

The licensee had constructed storage tanks, storage ponds, and a deep disposal well; therefore, the licensee could store or dispose of liquid waste effluents during plant operations. The licensee had not commissioned its wellfield restoration process circuit, but the licensee plans to commission this plant system prior to conducting wellfield restoration operations.

Management Organization and Controls

All management level positions had been filled with qualified staff. All critical support positions were filled with trained and qualified staff. These support positions included the radiation safety, laboratory, environmental monitoring, and operations staff. The inspectors concluded that the licensee had sufficient staff to commence operations, but noted that more staff may be necessary when operational activities are expanded.

The licensee established and implemented the Safety and Environmental Review Panel (SERP) process as stipulated in License Condition 9.4. The NRC staff reviewed recently completed SERP conclusions, and the inspectors concluded that the licensee was implementing the SERP process in accordance with its performance-based license requirements. The licensee established a quality assurance program as required by License Condition 12.10. The licensee also established procedures for routine and non-routine reporting requirements, and the licensee established a program for incident investigations, including spills. Finally, the licensee established programs for conducting routine audits and program reviews.

Plant Operations

The licensee constructed and tested plant equipment (pumps, valves, tanks, etc.) from the wellfield production area up to the ion exchange columns. The inspectors noted that the plant flowpaths were constructed in accordance with the NRC-approved license application, with several minor deviations. The inspectors compared the as-built design to drawings provided in the license application and noted that several minor changes had been made to the plant. The construction contractor plans to submit final as-built drawings to the licensee upon completion of the plant. Ion exchange resins and lixiviant chemicals were available to support plant operations. The licensee designed and constructed the plant to control effluents and contain spills. The inspectors noted that the facility was designed and constructed with an emphasis on operational safety.

Operational procedures have been established, and a sufficient number of operators have been trained to operate equipment in accordance with approved procedures. Task training will continue as plant systems are started and operated. During future inspections, the inspectors will review the licensee's implementation of operational procedures and training for the remaining systems when they are constructed, including the groundwater restoration flow paths.

The licensee installed instrumentation to monitor and record plant parameters (flow, temperature, pressure, etc.) in accordance with commitments provided in the license application. Alarms and associated response instructions have been established for critical plant parameters. The licensee established log sheets to document routine site inspections and key operational parameters as required by license requirements.

Wellfield Operations

The licensee constructed and tested the first wellfield production area. The wellfield package for the first production area had been reviewed and verified by the NRC. The licensee established procedures and trained a sufficient number of operators to commence with wellfield operations. The second mine unit was under construction during the onsite inspection.

At the time of the inspection, one header house was in operation, producing roughly 500 gallons per minute of total flow, with a licensed limit of 7,500 gallons per minute. The inspectors noted that the wellfield and header house were constructed in accordance with license application commitments. The inspectors did not observe any line leaks, indicating that the pipelines were structurally sound.

The licensee established procedures for controlling the wellfield bleed, to ensure an inward hydraulic gradient to minimize the potential for an excursion event. The licensee also established procedures for excursion monitoring including collection of groundwater samples.

Further, the licensee established procedures for identifying, responding to, remediating, and reporting wellfield spills and leaks.

Radiation Safety

The licensee has designed and begun implementation of a comprehensive radiation safety program that, as designed, would be protective of workers and the public. The licensee trained and qualified individuals to implement the program. The licensee established procedures for conducting the annual program review. Procedures have also been established for major activities including plant sampling, personnel monitoring, public dose assessments, and routine plant inspections. In addition, the licensee established a bioassay sampling program to monitor employees for potential uptakes of uranium.

The licensee had sufficient types and quantities of radiation measuring devices that were properly calibrated and functionally tested. Radiological postings were in place though additional postings may be necessary as the plant starts to produce uranium. Procedures were established for initial and refresher training in radiation protection, and initial training has been provided to plant staff and contractors. Site staff were trained in the use of meters for self-frisking when exiting the plant.

The licensee established area radiation and contamination controls in accordance with license and regulatory requirements. Fences, gates, and perimeter signs were used to delineate the site restricted area boundaries. The licensee constructed a designated area, adjacent to the central processing plant, for temporary storage of radioactive wastes.

Regulations require the licensee to use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are As Low As Reasonably Achievable (ALARA). The inspectors noted that the licensee had implemented the ALARA concept into its plant design as well as radiation protection, effluent, and environmental monitoring programs.

Environmental Monitoring

The licensee implemented programs for effluent and environmental monitoring. Procedures have been established and implemented for collecting and analyzing environmental samples. The inspectors noted that the licensee has the necessary equipment to collect the samples including installation and operation of six environmental air monitoring sampling stations. The licensee had qualified staff to collect the samples. The licensee established a process for analyzing the samples. The licensee also established a program for reporting effluent and environmental sample results to the NRC.

Training Program

The licensee established and implemented a training program. The training program included worker instruction for radiation safety, occupational safety, and operations. The licensee established methods to track training, including dates of training completed and dates when training is due to be completed. Initial radiation protection and safety training had been completed for site staff including contractors. At the conclusion of the onsite inspection, the licensee continued to provide training to operators, although it had a sufficient number of trained operators to run the plant.

Transportation Activities

The licensee established and implemented a program for transportation activities. These transportation activities included transfer of uranium-bearing resins to another mill, disposal of waste material at an offsite disposal site, and movement of potentially contaminated materials within the licensed area. For resin shipments, the licensee plans to be the shipper of record for outbound shipments, a contractor will be used as the carrier, and the other mill site will be shipper of record for return shipments. The licensee established transportation-related procedures including development of shipping papers, instructions to drivers, radiological surveys of transportation vehicles, and responses to accidents.

At the time of the inspection, the licensee's staff was lacking U.S. Department of Transportation function-specific training. Training related to transportation activities had been provided to some employees, but the licensee will have to provide additional transportation training to selected site workers prior to conducting shipping operations. This program area will be reviewed during future inspections.

Radiological Waste Management

The licensee established a program for handling liquid and solid radiological wastes (byproduct material). The licensee has established procedures for handling and disposing of both types of wastes. For solid wastes, the licensee has a waste disposal agreement in place, as required by License Condition 9.9. The licensee has established a wastewater disposal pathway using a storage tank, reverse osmosis skid, and deep disposal well. The licensee has the option to store wastewater in the storage pond prior to disposal in the deep disposal well.

Emergency Preparedness

The licensee established procedures for responding to emergencies, non-routine spills, and transportation incidents. The licensee established procedures for reporting of incidents/events. Further, the licensee established agreements with local emergency response agencies, including the fire department, local law enforcement agencies, and hospital. The licensee established a program for site security, including the use of locked gates, fences, and cameras.

Supplemental Information

The following attachments are provided as supplemental information to the inspection. Attachment 1 contains the list of licensee procedures reviewed as part of the supplemental inspection activity. Attachment 2 contains the preoperational inspection field notes, which details the specific requirements and associated findings.

SUPPLEMENTAL INSPECTION INFORMATION

Partial List of Persons Contacted

J. Durand, Production Superintendent
J. Fajgl, Vice President, Operations
M. Griffin, Vice President, Permitting, Regulatory and Environmental Compliance
R. Knode, Chief Executive Officer
B. Pile, TREC, Inc. Regional Manager
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
IP 88055	Fire Protection

Acronyms Used

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
CPP	central processing plant
DDW	deep disposal well
DOT	U.S. Department of Transportation
EMP	Environmental Management Program
EPA	U.S. Environmental Protection Agency
ERP	Emergency Response Plan
HAZMAT	hazardous material
HPT	health physics technician
IP	NRC Inspection Procedure
ISP	Industrial Safety Program
ISR	in situ recovery
LC	License Condition
MIT	mechanical integrity test
MU	mine unit
NRC	U.S. Nuclear Regulatory Commission
QA/QC	quality assurance/quality control
RG	Regulatory Guide
RPP	Radiation Protection Program
RSO	radiation safety officer
RWP	radiation work permit
SERP	Safety and Environmental Review Panel
SOP	standard operating procedure
TP	Training Plan
WDEQ	Wyoming Department of Environmental Quality

Procedures Reviewed

Management Procedures	
SOP-M-1	Contractor Site Access
SOP-M-2	Safety and Environmental Review Panel
SOP-M-3	Strata SHE Reporting Procedure
SOP-M-4	Document Control
SOP-M-5	Recordkeeping
SOP-M-6	Incident Investigation and Corrective Action

Operations Procedures	
SOP-O-1	Lixiviant Control (Main Pumps and IX Operation)
SOP-O-2	Resin Transfer
SOP-O-3	Waste System Operations
SOP-O-4	DDW Operation and Control
SOP-O-5	Bicarbonate System
SOP-O-6	CPP Emergency Shutdown
SOP-O-7	Emergency Well Field Shutdown
SOP-O-8	Workplace inspections and data recording
SOP-O-9	CPP and Wellfield Spill Reporting
SOP-O-10	Ventilation System Control
SOP-O-11	Generator System Control

Wellfield Procedures	
SOP-W-1	Oxygen Injection and Measurement
SOP-W-2	Starting a Header House
SOP-W-3	Well Start-Up/Shut-Down Procedures
SOP-W-4	Wellfield Pattern Balancing and Flow Measurement
SOP-W-5	Pulling Unit Operations
SOP-W-6	Removing and Installing Submersible Pumps
SOP-W-7	Excursion Monitoring

Laboratory Procedures	
SOP-L-1	pH by Standard Methods
SOP-L-2	Chloride By SM4500Cl-B
SOP-L-3	Alkalinity by Manual Titration
SOP-L-4	Conductivity by SM 2510B Manual
SOP-L-5	Uranium by Bromo-PADAP Colorimetric
SOP-L-6	Onsite Laboratory Chemical Hygiene Plan
SOP-L-7	Sulfate by Turbidimetry
SOP-L-8	Radon in Water Sampling
SOP-L-9	Bioassay Spike Preparation
SOP-L-10	QA and QC for Site Laboratory Operations

Drilling Procedures	
SOP-D-1	Drilling Operations

Construction Procedures	
SOP-C-1	Mechanical Integrity Testing
SOP-C-2	Cementer Unit Operation
SOP-C-3	Poly Press Unit Operation
SOP-C-4	Pipeline Pressure Testing
SOP-C-5	Poly Fusion Unit Operation
SOP-C-6	Hose Reel Unit Operation

Environmental Management Program Procedures	
EMP Section A	Introduction and Purpose
EMP Section B	Environmental Monitoring
EMP Section B.1	Water Monitoring
EMP Section B.2	Air Monitoring
EMP Section B.3	Direct Radiation Monitoring
EMP Section B.4	Soil and Sediment Monitoring
EMP Section B.5	Vegetation and Food Monitoring
EMP Section B.6	Wildlife Monitoring
EMP Section B.7	Meteorological Monitoring
EMP Section C	Environmental Inspections
EMP Section C.2	Wellfield Construction Inspections
EMP Section C.3	Environmental Field Inspections
EMP Section C.4	Lined Retention Pond Inspections
EMP Section C.5	Diversion Structure Inspection
EMP Section C.6	Header House Building, Wellhead, and Valve Vault Inspections
EMP Section C.7	Containment Barrier Wall Inspection
EMP Section C.8	Stormwater Pollution Prevention Plan Inspections
EMP Section C.9	Spill Prevention, Containment, and Countermeasures Plan Inspections
EMP Section C.10	Oshoto Dam Inspections
EMP Section D	Environmental Reporting
EMP Section D.1	Wyoming Department of Environmental Quality
EMP Section D.2	US Nuclear Regulatory Commission
EMP Section E	Wellfield Development and Monitoring
EMP Section E.2	Wellfield Data Package
EMP Section E.3	Well Development
EMP Section E.4	Wellfield Groundwater Baseline Monitoring Program
EMP Section E.5	Exempted Aquifer
EMP Section E.6	Wellfield Hydrologic Testing
EMP Section E.7	Determination of Monitor Well Upper Control Limits
EMP Section E.8	Determination of Target Restoration Values
EMP Section F	Archeological Resource/Human Remains Unanticipated Discovery Plan
EMP Section G	Waste Management
EMP Section G.1	Solid Waste Management and Disposal
EMP Section G.2	Hazardous Waste Management and Disposal
EMP Section G.3	Radioactive Waste (Byproduct Material) Management

EMP Section H	Reclamation
EMP Section H.2	Topsoil Management
EMP Section H.3	Revegetation
EMP Section I	Sediment and Erosion Control
EMP Section I.1	Soil Disturbing Activities
EMP Section I.2	Controls
EMP Section I.3	Maintenance
EMP Section I.4	Inspection

Radiological Protection Program Procedures	
RPP Section C	Radiation Protection Organization And Management
RPP Section D	Administrative Controls
RPP Section E	External Radiation Monitoring Program
RPP Section F	Uranium Bioassay Program
RPP Section G	Airborne Radioactivity Monitoring And Control
RPP Section H	Contamination Control
RPP Section I	Respiratory Protection Program
RPP Section J	Exposure Monitoring Program
RPP Section K	Transportation Of Radioactive Materials
RPP Section L	Radiological Laboratory Programs

Industrial Safety Procedures	
ISP Section B	Industrial Safety Program Organization And Management
ISP Section C	Hazard Control
ISP Section D	Personal Protective Equipment (PPE)
ISP Section E	Electrical Safety
ISP Section F	Hearing Conservation Program
ISP Section G	Hazard Communication (Hazcom)
ISP Section H	Chemical Safety
ISP Section I	Control Of Hazardous Energy
ISP Section J	Confined Space Entry
ISP Section K	Excavation/Construction Safety
ISP Section L	Fall Protection Program
ISP Section M	Fire Protection And Prevention
ISP Section N	Bloodborne Pathogens

Emergency Response Plan	
ERP Section B	Medical Emergencies
ERP Section C	Fires And Explosions
ERP Section D	Electrical And Gas Emergencies
ERP Section E	Chemical Emergencies
ERP Section F	Natural Disasters
ERP Section G	Security Plan
ERP Section H	Radiological Emergencies
ERP Section I	Transportation Emergencies
ERP Section J	Emergency Evacuation Procedures
ERP Section K	Emergency Reporting

ERP Appendix 1	Chemical Emergency Response Guide
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Training Program	
TP Section C	Industrial Safety Training
TP Section D	Radiation Safety Training
TP Section E	Hazardous Materials Transportation Training
TP Section F	Environmental Protection Training

Quality Assurance Plan	
QAP Section C	Personnel Qualifications and Training
QAP Section D	Operating Procedures
QAP Section E	Record Keeping and Reporting Requirements
QAP Section F	QA/QC of Radiological, Environmental and Effluent Monitoring Data and Samples
QAP Section G	Laboratory Management and Quality Control
QAP Section H	Quality Control for Maintenance and Calibration of Radiological, Environmental and Effluent Monitoring Instrumentation and Equipment
QAP Section I	Verification and Validation (V & V)
QAP Section J	Preventive and Corrective Actions
QAP Section K	Assessments, Audits, and Surveillances

Strata Energy Preoperational Inspection Field Notes

Category:	Management Organization and Controls
Topic:	Organizational Structure
Reference:	IP 88005, Section 02.01
Requirement:	LCs 9.2, 9.7; Application Sections 5.1, 5.4; Figure 5.1-1
Findings:	<p>The licensee's organizational structure is provided in License Application Section 5.1 and Figure 5.1-1. The licensee updated Figure 5.1-1 to reflect minor title changes via SERP 15-18. The inspectors reviewed SERP 15-18 and concluded that the SERP determination was performed in accordance with license requirements.</p> <p>The licensee had staffed all management level positions. Management staff were highly qualified and experienced for the work to be performed. The licensee also had sufficient support staff to commence with plant startup and site operations. The support staff included plant and wellfield operators, laboratory technician, and well drillers.</p> <p>The inspectors reviewed the qualifications of key licensee staff. The inspectors determined that key managers met the training and experience requirements for their positions as specified in the license. The NRC approved the radiation staff member qualifications by letter dated September 8, 2015, in response to LC 12.4 (ML15209A877).</p>
Documents Reviewed:	RPP procedures; QA Plan; RG 8.31; training records, personnel interviews, review of resumes for management and radiation protection staff; SERP 15-18 dated August 6, 2015

Category:	Management Organization and Controls
Topic:	Management and Administrative Practices for Operational Safety, Radiation Protection, Fire Protection, Chemical Safety, and Nuclear Criticality Safety
Reference:	IP 88005, Section 02.02
Requirement:	LCs 9.2, 9.4, 9.7, 12.2, 12.4, 12.10; Application Section 5.0
Findings:	<p>The inspectors reviewed the safety-related SOPs, including the approval process. Every procedure contained three approval signatures, including responsible management and the RSO. Each of the log sheets reviewed by the inspectors had approval signatures of the person responsible for the approval. The ISP included instructions for fire prevention, blood borne pathogen protection, fall protection, and confined space entry. The instructions for chemical safety were provided in ISP Section H, and the instructions for fire, electrical, and gas emergencies were provided in ISP Sections E, I, and M.</p> <p>The Plant Safety Committee is outlined in ISP Section B.9. The Plant Safety Committee included the Safety and Environmental Coordinator and at least</p>

	<p>four non-supervisory members, whose terms shall last one year. The Plant Safety Committee meetings are held quarterly, and more often if needed.</p> <p>The licensee provided each new employee with a copy of the new employee handbook, which outlined management and employees responsibilities. The Vice President of Permitting, Regulatory and Environmental Compliance is responsible for environmental awareness training during new employee orientation. The Vice President or RSO will provide annual environmental refresher training.</p> <p>The Safety and Environmental Coordinator developed industrial and occupational safety training program for all new and existing employees. The inspectors reviewed the handbook and noted that it included a broad range of topics. Employee training is tracked using a spreadsheet. Annual refresher training is required for industrial and occupational safety.</p> <p>The RSO performed the radiation safety training for all new employees and contractors. Annual refresher training will be performed for all employees and contractors. Training consists of a slide presentation, hands-on use of survey instruments, reading of SOPs, and an exam. Department of Transportation (DOT) Hazardous Material (HAZMAT) training is also conducted by the RSO for employees who will be involved in the shipment of radioactive materials.</p> <p>Procedure SOP-M-2 is the licensee's procedure for conducting SERP evaluations. The RSO was listed as a required member of the SERP in accordance with LC 9.4. The SERP procedure was comprehensive and was found to be in agreement with LC 9.4 requirements.</p> <p>The inspectors concluded that the licensee had an adequate program for management and administrative practices for operational safety, radiation protection, fire protection, and chemical safety. The inspectors determined that the licensee's staff understood their responsibilities related to operational safety, radiation protection, fire protection, and chemical safety.</p>
Documents Reviewed:	Procedures SOPs M-2, L-6; RPP Sections C & D; QA Plan; ISP Manual

Category:	Management Organization & Controls
Topic:	Procedure Controls
Reference:	IP 88005, Section 02.03
Requirement:	LCs 9.2, 10.4, 12.7, 12.9, 12.11; Application Section 5.2.1
Findings:	The SOPs are grouped into 12 categories, including Management, Operations, Wellfield, Laboratory, Drilling, Construction, Environmental Management, Radiological Protection, Industrial Safety, Emergency Response, Training, and QA Program. These SOPs cover a broad range of topics and were found to be comprehensive.

	<p>The licensee has procedures in place for management review of changes to the facility and site procedures. Changes to procedures include procedural requirements for management review and concurrence and staff training on the changes. Additional SOPs can be developed as needed using procedure SOP-M-4, Document Control. Procedure SOP-M-4 outlines the responsibilities and guidelines for writing an SOP and generating a log sheet, including formatting and process responsibilities. The licensee committed in License Application Section 5.2.1, that procedures will be reviewed annually. Procedure SOP-M-4 outlines the responsibilities for the annual review. The RSO will review radiation protection SOPs annually.</p> <p>As required by LC 10.4, a copy of the current written procedures are kept in the areas of the facility where they are utilized. Procedure SOP-M-4 provides instructions for control and distribution of updated procedures. The licensee also established a program for maintaining an electronic index of current procedures.</p> <p>The inspectors reviewed the SOPs for developing and managing procedures and found them to be in compliance with license commitments and regulations. The inspectors interviewed management and staff to determine if there was an understanding of the document control system. The inspectors concluded that the licensee staff understood the procedure control requirements.</p>
Documents Reviewed:	Procedure SOP-M-4; interviews with personnel

Category:	Management Organization & Controls
Topic:	Problem Identification, Resolution and Incident Investigations
Reference:	IP 88005, Section 02.04
Requirement:	10 CFR 20.1101(c); LCs 9.2, 9.7, 9.10, 10.4, 10.8, 10.21, 11.1, 11.2, 11.5, 11.6, 12.10, 12.11; Application Sections 5.2.1, 5.3
Findings:	<p>In LC 9.7, the licensee is required to follow RG 8.31, which states that the RSO will review all operating and radiation safety procedures annually. This license requirement was incorporated into Section C.5.2 of the RPP.</p> <p>The licensee's incident analysis policy, outlined in procedure SOP-M-6, Incident Investigation and Corrective Actions, ensures that near misses and incidents are properly analyzed and reported according to applicable Federal, State, and company regulations, policies, and procedures. As part of the incident investigation, the licensee has a method for reporting and tracking near miss incidents to prevent a true incident. The inspectors reviewed the applicable procedures and found them adequate to address identification, reporting, follow up, and close out of problems and incidents.</p> <p>Application Section 5.3 provides the commitments for daily and weekly inspections and monthly written summaries of radiation and environmental conditions. In accordance with LC 9.7, the licensee is required to follow the</p>

	<p>guidance provided in RG 8.30. The instructions provided in RPP Section C indicate that the RSO or HPT, or other qualified individuals, shall perform the daily walk-through facility inspections. The RSO and Operations Supervisor shall perform the weekly inspections. Monthly, the RSO will review the results of the daily and weekly inspections. In summary, the licensee has procedures for the daily and weekly inspections and monthly review of those inspections.</p> <p>An ALARA audit is required by LC 11.2, and the instructions for the ALARA audit are documented in RPP Section C.</p> <p>The EMP provides instructions for other site inspections. The storm water pollution prevention plan inspection requirements are provided in EMP Section C.8. The instructions for spill prevention, containment, and countermeasures plan inspections are provide in EMP Section C.9. Further, the Oshoto dam inspection instructions are provided in EMP Section C.10.</p> <p>The inspectors determined that the licensee has developed a program for facility inspections as required by the license and implementing procedures. The SOPs indicate that the licensee will conduct periodic reviews, audits, and assessments to assure that safety commitments are reviewed at an appropriate frequency. The licensee has procedures in place for incident investigation and corrective actions.</p>
Documents Reviewed:	Procedures SOP-M-6; ISP Section B.11; RPP Sections C.3.6, C.5.2; EMP Section C

Category:	Management Organization & Controls
Topic:	Plant Safety Committees
Reference:	IP 88005, Section 02.05
Requirement:	LCs 9.2, 9.4; Application Section 5.2.4
Findings:	<p>In accordance with LC 9.4 and License Application Section 5.2.4, the licensee established a performance-based license and associated SERP. The inspectors reviewed the summary of actions taken by the licensee's SERP. Based on the 2014 Annual Report (ML15027A420), the licensee had not performed any safety reviews using the SERP process in 2014. At the time of the inspection, during 2015, the licensee conducted 18 reviews and documented these reviews in SERPs 15-1 through 15-18.</p> <p>The inspectors reviewed the 2015 SERP determinations. The licensee implemented each panel using the required number of personnel with adequate qualifications and addressed the evaluation criteria listed in LC 9.4. The documentation included sufficient background information and evaluations. The inspectors did not identify any additional changes from the approved application that would have required an evaluation by the SERP.</p> <p>The inspectors reviewed SOP-M-2, Safety and Environmental Review Panel, for establishing the panels and conducting evaluations. The inspectors interviewed management personnel responsible for implementing the SERP</p>

	process and found that management oversight was consistent with commitments made in the approved application. In summary, the inspectors determined that the licensee had implemented the SERP process consistent with LC 9.4 and approved application.
Documents Reviewed:	Procedure SOP-M-2; SERPs 15-1 through 15-18

Category:	Management Organization and Controls
Topic:	Quality Assurance Programs
Reference:	IP 88005, Section 02.06
Requirement:	10 CFR 20.1703; LC 12.10; Application Section 5.7.9
Findings:	<p>Pursuant to LC 12.10, the licensee submitted its QA Plan to the NRC on March 5, 2015, for review and verification. The QA Plan, as amended to Revision 1, was verified by the NRC Staff on October 16, 2015 (ML15278A130), as meeting the requirements provided in 10 CFR 20.1703(c)(4)(vii) and was consistent with RG 4.15 (as revised).</p> <p>The inspectors verified that the QA Plan was being implemented as described. The inspectors' verification consisted of discussions with managers responsible for proper implementation of the QA Plan and observation of personnel implementing selected procedures including the radiation staff, wellfield and CPP operators, and laboratory staff. In summary, the inspectors determined that the licensee's QA Plan was consistent with RG 4.15 and was being implemented by the licensee.</p>
Documents Reviewed:	QA Plan (ML15076A045, ML15190A124, ML15233A422, ML15278A256); Various procedures referenced by QA Plan

Category:	In-Situ Leach Facilities
Topic:	Facilities
Reference:	IP 89001, Section 02.05
Requirement:	LCs 9.1, 9.2, 9.5, 9.11, 10.1, 10.2, 10.5, 10.7, 10.11, 10.12, 10.13, 10.19 & 10.20; Application Section 3.0
Findings:	<p>Regulation 10 CFR 40.32(c) requires that an applicant's proposed equipment, facilities and procedures are adequate to protect health and safety and minimize danger to life or property. The licensee committed to construct and operate a facility in accordance with the description provided in Section 3.0 of the License Application.</p> <p>The major surface improvements for the Ross ISR Project consist of the construction of the CPP and ancillary structures (administrative and maintenance building, containment barrier wall, dewatering system, lined storage pond, sedimentation basin, DDW well, and fencing, piping to the wellfields) and construction of the wellfields (header houses and wells).</p>

The licensee constructed the equipment necessary to pump lixiviant between the CPP and wellfields. The uranium-bearing fluids are pumped to the CPP where ion exchange columns remove the uranium from the production flow. When the ion exchange column resins are fully loaded, the licensee plans to transfer the resins by truck to an off-site NRC-licensed facility for further processing. The barren resins will be returned to the CPP for reuse after offsite processing.

At the time of the onsite inspection, the licensee was pumping water from the first wellfield, through the IX columns, and back to the wellfield. The flow rate was approximately 500 gallons per minute with a design flow capacity of 600-1,000 gallons per minute per wellfield. The licensee plans to implement an average bleed rate of 1.25%, ranging from 0.5 to 2.0%, as allowed by License Application Section 3.1.4. Actual system pressures were observed to be well below the design pressure of 140 pounds per square inch.

The licensee established proper storage facilities for chemicals used at the plant and wellfield. The storage facilities were constructed in accordance with the approved application.

One DDW has been installed and permitted for use. This well will be used to dispose of plant wastewater and similar liquid effluents. The well is capable of disposing wastewater at a rate of 50 gallons per minute. This design exceeds that estimated in the approved application.

One lined pond (Pond 1) was constructed to hold byproduct material. The inspectors verified that the construction was performed in accordance with the approved application and LCs 10.8 & 10.11.

At the time of the inspection, the first header house (HH-1) in Mine Unit 1 (MU-1) has been completed and tested. The licensee was installing the wells and header house for the second wellfield. In accordance with LC 9.5, the licensee is limited to two header houses in MU-1 based on the approved annual surety. The header houses and associated wells have been or were being constructed in accordance with the approved application. MU-1 is located north of the Little Missouri River consistent with the requirements of LC 10.19.

Fencing has been installed around the CPP area, MU-1, and storage pond. The fencing included the proper posting as required by LC 9.11.

The licensee performed mechanical integrity testing (MIT) on 149 wells in MU-1 in accordance with LC 10.5 and the approved application. Only one well failed its MIT. This well was replaced and retested.

At the time of the inspection, the licensee had installed, but not fully commissioned, the groundwater restoration portion of the plant (i.e., the reverse osmosis equipment). Because no wellfields were in restoration, commissioning of this portion of the plant was not required for

	<p>commencement of operations. The licensee plans to construct and test this portion of the plant prior to actual use.</p> <p>The NRC staff reviewed and verified the MU-1 wellfield package submitted by the licensee pursuant to LC 10.13 (ML15324A441). In addition, LC 10.12 requires the licensee to document its attempts to abandon historic drill holes in the wellfield. As documented in the verification technical evaluation report, the inspectors confirmed: (1) the construction of nested well pairs for wells PM12 and PM19; (2) recalculation of the upper control limits for the aquifer underlying the ore zone (the DM unit); and (3) abandonment of drill holes.</p> <p>In summary, the inspectors concluded that the licensee constructed the plant and wellfield in accordance with the approved application and applicable license conditions up to the ion exchange columns. The licensee plans to construct the precipitation, elution, and dryer circuits at a later date.</p> <p>The inspectors conducted field walk-downs and procedure reviews to verify if the plant flow path and design complied with License Application commitments. Overall, the plant agreed with the license application with several minor deviations. The licensee's contractor agreed to provide the licensee with a complete set of as-built drawings after conclusion of construction, and the licensee agreed to update the license application in accordance with its performance-based license.</p> <p>The inspectors noted that the plant was designed and constructed with an emphasis on safety. The design included sloped floors, berms, and sumps to contain spills. The ventilation systems were designed to minimize radon buildup within the CPP and header houses. The licensee designated an outdoor area for radiological waste storage and constructed and posted a fence around this area.</p>
Documents Reviewed:	Plant layout and flow path drawings as shown in License Application Section 3.0; Operations Procedures SOP-O-1 through 11, Wellfield Procedures SOP-W-1 through 7

Category:	In-Situ Leach Facilities
Topic:	Equipment and Instrumentation
Reference:	IP 89001, Section 02.06
Requirement:	LC 9.2; Application Section 3.0
Findings:	The licensee committed to construct and install the plant in accordance with the description provided in Section 3.0 of the License Application. The inspectors reviewed the licensee's implementation of Section 3.1.7, wellfield leak detection and instrumentation, and Section 3.3, instrumentation and controls. The facility instrumentation included flow, pressure, and level gauges and switches. Key instrumentation were tied to the licensee's human-machine interface, to actuate visual and audible alarms to alert operators to abnormal conditions. The licensee's contractor was finalizing the programming of the human-machine interface at the time of the inspection,

	and the contractor planned to give the licensee a list of alarm setpoints when the programming was complete. The inspectors confirmed that major plant parameters were being monitored, as stipulated in the license application drawings. The contractor planned to give the licensee updated as-built drawings upon completion of all construction activities.
Documents Reviewed:	Plant layout and flow path drawings as shown in License Application; Operations Procedures SOP-O-1 through 11, Wellfield Procedures SOP-W-1 through 7

Category:	In-Situ Leach Facilities
Topic:	Materials
Reference:	IP 89001, Section 02.07
Requirement:	10 CFR 20.1801 & 1802; LCs 9.2, 10.2, 10.4, 10.17, 12.2; Application Section 5.6
Findings:	<p>The licensee does not anticipate receiving any radioactive material; therefore, it did not create procedures related to receipt of packages. The licensee had established procedures to ensure that the transportation of uranium-loaded resins will be conducted under applicable DOT regulations and will be sent to a licensed uranium recovery facility authorized to receive these resins for processing. The licensee established procedures for maintaining inventory of source material.</p> <p>The licensee will maintain security, in part, by use of fencing, key-pads, and security cameras. The front gate is kept locked after hours. The licensee's planned responses to security threats are included in the ERP, Section G, Security Plan. Daily walk-through inspections include verification of the security implementation at the facility.</p>
Documents Reviewed:	RPP Section C & ERP Section G

Category:	In-Situ Leach Facilities
Topic:	Training
Reference:	IP 89001, Section 02.08
Requirement:	10 CFR 19.12, 49 CFR 172.704; LCs 9.2, 9.6, 9.7, 9.10, 10.8, 12.4; Application Sections 4.0, 5.2.2, 5.2.4.1, 5.4.3, 5.5
Findings:	The licensee's training program provided instructions for training of employees, contractors, and visitors. The training program included industrial safety training as required by the Occupational Safety and Health Administration, radiation safety training as required by NRC, transportation of radioactive material training as required by DOT, and environmental protection training as required by the EPA and WDEQ. The inspectors determined that the licensee's radiation safety training program met the requirements of 10 CFR Part 19, RG 8.31, RG 8.13, RG 8.29, and RG 8.25.

	<p>Each employee is given general awareness, job specific, and annual refresher training. Any employee who is designated as a HAZMAT employee, as defined by DOT, is provided initial training, job specific training, and refresher training every three years. At the time of the onsite inspection, all employees had completed initial training including radiation safety, industrial safety, and emergency response training, with the exception of an employee who began work during the preoperational inspection.</p> <p>At the time of the inspection, the licensee had adequate personnel for the wellfield, plant, radiation safety, and environmental monitoring programs. The senior-level personnel had significant experience in operations.</p> <p>Section 5.4 of the License Application provides the minimum qualifications for RSO and the HPT. The licensee implemented an NRC-approved training program for plant operators to perform the daily plant walk through, which is normally conducted by the RSO or HPT. The inspectors verified that the training program was in place in accordance with LC 9.7. At the time of the inspection, several operators had begun training, although none had been certified to perform the daily walk through independently.</p> <p>The licensee established a training program for operators in the wellfield and CPP. At the time of the inspection, the licensee had nine operators that performed both wellfield and plant operations. One operator was also cross-training to become a HPT. To support operator training, the licensee established an extensive task training program. During task training, operators are taught how to operate plant systems. The operator must complete task training before being granted authorization to operate plant systems without supervisory oversight. Training was not complete for all operators for all plant systems, in part, because the plant systems have to be in service to allow the operators to complete task training. As required by LC 9.10, operator training is documented on several procedural log sheets.</p>
Documents Reviewed:	Training Program; QA Plan; interviews with employees

Category:	In-Situ Leach Facilities
Topic:	Area Radiation and Contamination Control
Reference:	IP 89001, Section 02.09
Requirement:	10 CFR Part 20; LCs 9.2, 9.6, 9.7, 9.10, 9.11, 10.4, 10.5, 10.17; Application Sections 4.1.2, 5.2.5, 5.2.6, 5.7.2, 5.7.6
Findings:	<p>The licensee established area radiation and contamination controls in accordance with license and regulatory requirements. The controls included area postings and boundaries. Fences, gates, and perimeter signs are used to delineate the site controlled area boundaries as defined by the licensee. The radiologically restricted areas are identified on a map provided to the inspectors. In accordance with LC 9.11, entrances into the facility were posted with "Caution: Any Area Within This Facility May Contain Radioactive</p>

	<p>Material.” Breaches of security or loss of control of radioactive material will require activation of the Emergency Plan.</p> <p>The licensee had adequate instrumentation to identify and quantify surface and removable alpha and beta contamination and to detect radiation areas. Procedures were in place to perform routine and reactive contamination surveys. Protective clothing such as gloves, respirators, booties, and coveralls were available for work with radioactive material.</p>
Documents Reviewed:	RPP Sections E, G, H, I & K; ERP Sections G, H & J

Category:	In-Situ Leach Facilities
Topic:	Radiation Protection
Reference:	IP 89001, Section 02.10
Requirement:	10 CFR Part 20; LCs 9.2, 9.6, 9.7, 9.9, 9.10, 9.11, 10.4, 10.15, 10.16, 10.17, 10.18, 11.2, 11.6, 12.4, 12.7, 12.9, 12.11; Application Section 5.0
Findings:	<p>The licensee established a radiation protection program that met the intent of 10 CFR Part 20, the license, and the license application. The radiation protection program is commensurate with the licensee's planned activities. The program is scheduled to be reviewed at least annually for content and implementation by the RSO.</p> <p>The licensee implemented radiation protection procedures, including instrumentation and calibration of instrumentation and equipment, personnel radiation monitoring, bioassays, radioactive air monitoring, radiation surveys, and internal and external exposure calculations. Bioassays and dosimetry are sent off site for processing. The radiation safety training of site staff was complete at the time of the onsite inspection.</p>
Documents Reviewed:	RPP; Training Plan Sections D & E

Category:	In-Situ Leach Facilities
Topic:	Environmental Protection
Reference:	IP 89001, Section 02.11
Requirement:	LCs 10.12, 10.13; Application Sections 4.2.2, 4.2.3, 5.7.8
Findings:	The inspectors verified that the preoperational water quality was properly collected, and wellfield Mine Unit 1 was appropriately designed and could be operated. The NRC staff completed the verification of the Mine Unit 1 wellfield package (ML15324A441), reviewed procedures SOP-W-1 through SOP-W-6, SOP-D-1, SOP-C-1, EMP Section E, and as-built drawings. The inspectors observed operator actions during various routine tasks.

	<p>The inspectors verified that the storage pond was constructed in accordance with the approved application. The inspectors verified that EMP Section C.4 provided procedures ensuring that the pond is properly inspected and monitored for leak detection and to guard against leaks. The inspectors accompanied and verified an operator performing the routine daily inspection of the pond.</p> <p>The inspectors verified that the routine excursion monitoring program was properly defined by reviewing various procedures including EMP Section E.8 and laboratory Procedures SOP-L-1 through SOP-L-10, discussions with laboratory personnel on the instrumentation, and accompanying field personnel during a routine well sampling operation.</p> <p>The inspectors verified that the DDW was constructed and ready for operation. At the time of the inspection, the DDW was not in operation due to the lack of fluids requiring disposal. The inspectors will verify DDW operations during the next routine inspection.</p>
Documents Reviewed:	Procedures SOP-W-1 through SOP-W-6, SOP-L-1 through 10, SOP-C-1, SOP-D-1; EMP Section E.8

Category:	In-Situ Leach Facilities
Topic:	Effluent Monitoring Program
Reference:	IP 89001, Section 02.12
Requirement:	LCs 9.2, 10.9; Application Sections 5.7.1, 5.7.7
Findings:	<p>The licensee established an effluent monitoring program for measuring effluents from the facility. Section 5.7.1 of the License Application provides the sources of airborne effluents and engineering controls (tank venting, ventilation fans) to minimize worker exposures to effluents. Section 5.7.7 describes the airborne effluent and environmental monitoring program. Details of the effluent monitoring program are provided in the EMP including sampling locations, lower limits of detection, and quality control requirements. In accordance with Section D of the RPP and Section K of the QA Plan, the effluent and environmental monitoring programs are reviewed annually as part of the ALARA/radiation protection program review. The inspectors reviewed the licensee's proposed effluent monitoring program and concluded that the equipment was typical for the industry and should be capable of sampling effluents at the required lower limits of detection.</p> <p>The licensee's commitments for handling liquid wastes are provided in Section 4.2 of the License Application. Liquid effluents will not be released directly to the environment. The licensee plans to clean liquid effluents by reverse osmosis, or dispose of liquid effluents via the DDW or by evaporation. The licensee developed operating procedures for the plant equipment that will handle liquid wastes.</p> <p>In accordance with License Condition 12.7(A), the licensee committed to explain how the quantity of the principal radionuclides from all point and</p>

	diffuse sources will be accounted for, and verified by, the performance of surveys and monitoring. The licensee provided a series of proposals, and the NRC subsequently approved the licensee's proposals by letter dated November 19, 2015 (ML15302A405). These commitments were incorporated into the EMP and RPP. The inspectors will review the licensee's implementation of these commitments during future inspections.
Documents Reviewed:	EMP; RPP; NRC letter dated November 19, 2015 (ML15302A405)

Category:	In-Situ Leach Facilities
Topic:	Air Sampling
Reference:	IP 89001, Section 02.13
Requirement:	LCs 9.2, 9.7, 10.15, 10.16, 12.7; Application Sections 5.7.1, 5.7.3, 5.7.7
Findings:	<p>The licensee established air sampling programs to monitor worker exposures within occupied buildings and to monitor effluents from the facility. The licensee's program within the plant included air particulate samplers and radon progeny measurements. The effluent monitoring program included air particulate samplers and radon track-etch canisters. The licensee implemented the air sampling programs into its RPP (Section G) and EMP (Section B.2). Both manuals included instructions for addressing lower limits of detection and action levels for air sampling. Section F of the QA Plan describes the QA/QC requirements for radiological, environmental, and effluent monitoring data and samples.</p> <p>The ALARA program is described in Section D of the RPP. In particular, Section D.5 states that a comprehensive review of the radiation protection program and ALARA program will be performed annually. The annual program evaluation will include radiological survey and sample results and the environmental monitoring program which includes air sampling results. The inspectors confirmed that the licensee had established and implemented programs for air sampling within site buildings and effluents from site buildings. The sampling equipment was typical for the industry and should be capable of measuring radioactive particulates and radon in the air.</p>
Documents Reviewed:	RPP; EMP; QA Plan

Category:	In-Situ Leach Facilities
Topic:	Financial Assurance
Reference:	IP 89001, Section 02.14
Requirement:	LC 9.5; Application Section 6.5
Findings:	The NRC staff approved the financial assurance for the Ross ISR Project in the amount of \$6,397,000 on October 19, 2015, as Amendment 3 to License

	SUA-1601 (ML15202A143). The financial assurance estimate includes costs for ground water restoration for the first two header houses in Mine Unit 1, well plugging and abandonment, building demolition, surface reclamation, and topsoil placement. The inspectors verified that the conditions at the facility during the inspection are consistent with those used in the surety update.
Documents Reviewed:	License Amendment 3 (ML15202A143)

Category:	In-Situ Leach Facilities
Topic:	Waste Management
Reference:	IP 89001, Section 02.15
Requirement:	LCs 9.2, 9.7, 9.9, 9.10, 12.5, 12.11; Application Sections 1.10, 4.2, 4.3
Findings:	<p>The licensee established programs for management of solid and liquid radioactive wastes. Trash bins containing radioactive waste will be transferred to an intermodal or dumpster for temporary storage until shipped offsite for disposal. The temporary storage bin for the solid waste is located in a restricted area adjacent to the CPP. The licensee had procedures in place for surveying and manifesting shipments of solid waste. The licensee had a valid contract in place for disposal of 11e.(2) solid waste at an NRC-licensed facility.</p> <p>Liquid wastes will be disposed via DDW or evaporation. One waste storage tank in the CPP and one pond will be used to hold liquid waste prior to disposal.</p>
Documents Reviewed:	Procedures SOP-O-3, SOP-O-4; EMP Section G; RPP Sections H & K

Category:	In-Situ Leach Facilities
Topic:	Transportation
Reference:	IP 89001, Section 02.16
Requirement:	10 CFR 71.5; LCs 9.2, 9.7, 10.4, 12.5, 12.10, 12.11; Application Sections 5.6, 7.5.4
Findings:	The licensee established a procedure (RPP Section K) for transportation of radioactive material, including uranium-bearing resins, 11e.(2) byproduct material, and laboratory samples. The Training Program (Section E) provides instructions for DOT HAZMAT training. Procedure EMP, Section I, contains instructions for actions to be taken in response to a transportation event.
Documents Reviewed:	RPP Section K; EMP Section I; Training Program Section E

Category:	In-Situ Leach Facilities
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Topic:	Posting and Labeling
Reference:	IP 89001, Section 02.17
Requirement:	10 CFR Parts 19 & 20; LCs 9.2, 9.7, 9.11, 10.17; Application Section 5.2.6
Findings:	The licensee established a program for posting and labeling that met the intent of the license and regulations. Postings were observed at the entrance to the wellfield and restricted areas, including the CPP. Caution signs are available for future use as necessary. The transportation procedure included the necessary labeling, placarding, and marking requirements for radioactive shipments. The inspectors observed the postings required by 10 CFR 19.11 in the break rooms and control room in the CPP.
Documents Reviewed:	RPP Sections D, E, G, I & K; Observation of radiological postings

Category:	In-Situ Leach Facilities
Topic:	Generic Communications of Information
Reference:	IP 89001, Section 02.18
Requirement:	None
Findings:	The inspectors verified through discussions with licensee personnel on how NRC generic communications or other types of correspondence would be processed. Correspondence received at Strata Energy's office in Gillette will be reviewed by addressee (Chief Executive Officer or Vice President, Permitting, Regulatory and Environmental Compliance) and distributed to the appropriate manager for action. Communications that require posting, such as inspection reports, are brought to the facility as appropriate.
Documents Reviewed:	Discussions with licensee management

Category:	In-Situ Leach Facilities
Topic:	Notifications and Reports
Reference:	IP 89001, Section 02.19
Requirement:	LCs 9.8, 11.1, 11.2, 11.5, 11.6; Application Section 5.2
Findings:	The Inspectors verified that the licensee was in compliance with NRC reporting requirements since issuance of the license in April 2014. The semi-annual and annual reports have been submitted to the NRC in a timely manner (ML14234A074, ML15027A420 & ML15247A061). Because operations have not yet been initiated, quarterly reporting pursuant to LCs 11.1(A) and 11.1(B), excursion reporting pursuant to LC 11.5, and the annual review of the radiation protection program are not required. No spills have occurred; therefore, no reporting pursuant to LC 11.6 is required. The licensee submitted an annual report pursuant to the cultural resource

	programmatic agreement described in LC 9.8 in a timely manner (ML15014A216).
Documents Reviewed:	Procedures EMP Section D; QAP Section E

Category:	In-Situ Leach Facilities
Topic:	Special License Conditions
Reference:	IP 89001, Section 02.20
Requirement:	LCs 9.8, 12.1 through 12.13; Application Section 5.2
Findings:	<p>The inspectors verified with licensee personnel that the licensee was in compliance with the terms and conditions of the Programmatic Agreement (PA) (ML14111A346) developed to protect cultural resources within the Ross ISR Project boundary pursuant to LC 9.8.</p> <p>The inspectors verified that all preoperational license conditions (Section 12 of license SUA-1601) were complete:</p> <ul style="list-style-type: none"> • LC 12.1 required obtaining all necessary permits/license and/or approvals. Strata Energy had the following permits: <ul style="list-style-type: none"> ○ WDEQ Permit to Mine dated 11/16/12 ○ WDEQ Air Permit dated 10/08/13 ○ WDEQ Class I UIC Wells Permit dated 04/13/11 ○ EPA Class I Aquifer Exemption dated 09/01/15 ○ WDEQ General Construction Storm water Discharge dated 01/17/13 ○ WDEQ Discharge Pumping and Development Water ○ EPA Class II Aquifer Exemption dated 05/15/13 ○ WDEQ Small Wastewater System dated 07/25/15 ○ WDEQ Construct Public Water System dated 04/18/14 • LC 12.2 Coordinate critical emergency response • LC 12.3 New well survey; no new wells installed since licensee's letter dated June 1, 2015 (ML15154B122) • LC12.4 (ML15209A877) • LC12.5 (ML15097A070) • LC12.6 Documented in this inspection report • LC 12.7 (ML15302A405, ML15278A110) • LC 12.8 License Amendment 4 (ML15295A045) • LC 12.9 (ML15278A123) • LC12.10 (ML15278A130) • LC 12.11 Documented in this inspection report • LC 12.12 (ML15190A170) Plan implementation verified by the inspectors • LC 12.13 (ML15197A102) Continuous data collection verified by inspectors
Documents Reviewed:	Procedure SOP-M-2; EMP Section D

Category:	In-Situ Leach Facilities
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Topic:	Independent and Confirmatory Measurements
Reference:	IP 89001, Section 02.21
Requirement:	NRC Manual Chapter 2641, Section 7
Findings:	As part of the inspection program, the inspectors routinely measure ambient gamma radiation exposures, and on occasion, surface contamination levels. Since the licensee has not commenced with operations, the inspectors did not conduct independent and confirmatory measurements during the preoperational inspection. However, the inspectors plan to conduct confirmatory measurements during future inspections, after the licensee begins to possess radioactive source and byproduct materials.
Documents Reviewed:	NRC Inspection Procedures

Category:	Radiation Protection
Topic:	Radiation Protection Program
Reference:	IP 83822, Section 02.01
Requirement:	10 CFR Part 20; LCs 9.2, 9.4, 9.6, 9.7, 9.10, 10.4, 10.15, 10.16, 10.17, 10.18, 11.2, 12.7, 12.9, 12.11; Application Section 5.0
Findings:	<p>In the short term, the most risk significant radiation protection program element is the packaging and transport of uranium-bearing resins. The licensee will load and transfer uranium-bearing resins and transport the resins to another NRC-licensed facility for processing. The licensee has established sufficient procedures, equipment, and training to ensure that transportation activities are conducted in a safe manner and in accordance with NRC requirements.</p> <p>In the long term, the most risk significant radiation protection program element will be the drying and packaging of uranium yellowcake material. This portion of the plant has not been constructed. The inspectors plan to conduct a preoperational inspection of this portion of the plant at some future date.</p> <p>The licensee established a program for performing annual reviews of the radiation safety program in accordance with 10 CFR 20.1101(c) and RG 8.31. License Condition 11.2 requires this report to be submitted to the NRC. The instructions for the ALARA audit are documented in the RPP, Section C, and the QA Plan, Section K.2.1.</p>
Documents Reviewed:	RPP Sections C, D & K; QA Plan Section K

Category:	Radiation Protection
Topic:	Radiation Protection Procedures
Reference:	IP 83822, Section 02.02

Requirement:	LCs 9.2, 10.4, 12.7 12.9, 12.11; Application Sections 4.0, 5.1.10, 5.2.1, 5.2.4.1, 5.7.6.3.1
Findings:	Radiation protection procedures have been established for instrumentation use and control, radiation surveys, release of equipment, internal and external dose monitoring and reporting, air monitoring, radiological controls, and transportation activities. Administrative procedures are in place to ensure that SOPs are reviewed annually by the RSO and other responsible managers. Changes in procedures require management approval. Training is provided to licensee's staff when procedures are changed.
Documents Reviewed:	Procedures SOP-M-4, SOP-M-5; QA Plan Section D

Category:	Radiation Protection
Topic:	Instruments and Equipment
Reference:	IP 83822, Section 02.03
Requirement:	LCs 9.2, 9.6, 9.7, 9.10, 10.15, 11.2, 12.10; Application Sections 5.4.3, 5.7.6.3, 5.7.6.2.2; 10 CFR 20.1501 & 20.1502
Findings:	The licensee established procedures for controlling radiation protection equipment, including instrument calibrations. The licensee also established procedures, log sheets, and forms for routine monitoring and recording of survey results. The inspectors observed licensee staff appropriately using survey meters at the exits of the restricted area. The types of equipment available are appropriate for the work involving radioactive material. Backup instruments are available when primary instruments are unavailable, including periods of time when instruments are shipped offsite for calibration. All survey equipment will be sent to a State-licensed calibration company. Survey and sample counting equipment are expected to meet the lower limits of detection or minimum detectable activities, as required by RG 8.30.
Documents Reviewed:	RPP Sections E, H, L & G; QA Plan Sections F, G & H

Category:	Radiation Protection
Topic:	Exposure Controls (external exposure, internal exposure & respiratory protection)
Reference:	IP 83822, Section 02.04
Requirement:	10 CFR Part 20, Subparts C & H; LCs 9.2, 9.7, 9.10, 10.4, 10.9; Application Sections 4.1.2, 4.1.3, 5.7.2 – 5.7.5
Findings:	The licensee established procedures for measuring and recording internal and external exposures. The licensee also established an RWP process to help control exposures during non-routine work activities. The respiratory protection program was implemented to control the inhalation of radioactive material during non-routine maintenance work. The licensee established a routine bioassay program to monitor for potential uptakes of radioactive material. The licensee also established a program for controlling contamination, including requirements for personnel surveys. The inspectors

	<p>observed that site employees conducted alpha and beta contamination surveys prior to exiting the restricted areas at the CPP in accordance with license requirements.</p> <p>During future inspections, the inspectors will continue to review the licensee's implementation of personnel contamination surveys. The inspectors will ensure that site workers understand survey techniques and are capable of demonstrating their proficiency in conducting contamination surveys.</p>
Documents Reviewed:	RPP Sections D, E, F, G, H, I & J

Category:	Radiation Protection
Topic:	Posting, Labeling and Control
Reference:	IP 83822, Section 02.05
Requirement:	10 CFR Parts 19 & 20; LCs 9.2, 9.7, 9.11, 10.17; Application Section 5.2.6
Findings:	The licensee established a program for posting and labeling that met the intent of the license and regulations. Postings were observed at the entrance to the wellfield and restricted areas, including the storage pond, waste storage area, and CPP. Caution signs are available for future use as necessary. The transportation procedure included the necessary labeling, placarding, and marking requirements for radioactive shipments. The inspectors observed the postings as required by 10 CFR 19.11 in the break rooms and control room in the CPP.
Documents Reviewed:	RPP Sections D, E, G, I & K; observation of radiological postings

Category:	Radiation Protection
Topic:	Surveys
Reference:	IP 83822, Section 02.06
Requirement:	10 CFR Part 20; LCs 9.2, 9.6, 9.7, 9.10, 9.11, 10.4, 10.5, 10.17; Application Sections 4.1.2, 5.2.6, 5.7.2, 5.7.6
Findings:	The licensee established contamination controls including surveys for surface contamination, personnel, equipment prior to release, and transportation of radioactive material. The licensee had the equipment, procedures, and log sheet forms for conducting and documenting these surveys.
Documents Reviewed:	RPP Sections D, E, F, G, H, I, J & K

Category:	Radiation Protection
Topic:	Notifications and Reports

Reference:	IP 83822, Section 02.07
Requirement:	10 CFR 19.13, 10 CFR Part 20, Subpart M, Reports; LCs 9.2, 9.4, 10.8, 11.1, 11.2, 11.5, 11.6; Application Section 5.2.5
Findings:	Emergency notification instructions involving radioactive materials are provided in the ERP. These instructions include the immediate, 24-hour, 48-hour, and 30-day reporting requirements as specified in 10 CFR Part 20, Subpart M, as well as 10 CFR 40.60. The license has LCs pertaining to reporting of shutdown of the DDWs in certain instances, quarterly and semiannual reporting of production activities, SERP change pages, annual radiation program evaluation, excursions, and spills.
Documents Reviewed:	RPP Section J.5.4; QA Plan Sections E & J; ERP Section K

Category:	Radiation Protection
Topic:	As Low As Reasonably Achievable (ALARA)
Reference:	IP 83822, Section 02.08
Requirement:	10 CFR 20.1101(b); LCs 9.2, 9.7, 11.2; Application Sections 5.1.9 & 5.3.6
Findings:	The licensee established an ALARA program in accordance with regulations, license commitments, and RG 8.30. The program included a management commitment to ALARA as well as routine ALARA audits. The radiation safety staff has the authority to ensure that ALARA policies are carried out. The RSO will review radiation safety procedures annually for ALARA improvements. The licensee's radiation protection program encourages worker suggestions on radiation protection. The ALARA program also includes routine inspections of plant conditions and training/retraining of site workers.
Documents Reviewed:	QA Plan Sections A, C.3, K.2.1 & K.3.2.3; RPP Sections D.1 & D.5; Training Program Sections D.3 & D.4; ALARA Commitment; interviews with management and staff

Category:	Effluent Control and Environmental Protection
Topic:	Management Controls
Reference:	IP 88045, Section 02.01
Requirement:	LCs 9.2, 9.10, 10.9, 11.2, 12.10; Application Sections 5.1.5, 5.3.6, 5.7.9
Findings:	The organizational and managerial requirements are specified in Section A.2 of the EMP and Section B of the QA Plan. These documents also specify the responsibilities for implementing the effluent and environmental monitoring programs. The Vice President of Permitting, Regulatory, and Environmental Compliance has overall responsibility for implementing the effluent and environmental programs. The inspectors confirmed that all required management positions were filled with qualified individuals.

	<p>Routine reviews of the effluent and environmental monitoring programs will be conducted as part of the annual radiation protection and ALARA program audits. The Vice President and RSO are required to review the audit conclusions and ensure that proper corrective actions are implemented. The annual program review will be submitted to NRC in accordance with LC 11.2.</p> <p>Deficiencies and non-conformances in the effluent and environmental monitoring programs will be investigated in accordance with the licensee's corrective action program as described in Section J, Preventive and Corrective Actions, of the QA Plan.</p>
Documents Reviewed:	EMP Section A; QA Plan Sections B & J

Category:	Effluent Control and Environmental Protection
Topic:	Quality Control of Analytical Measurements
Reference:	IP 88045, Section 02.02; RG 4.14
Requirement:	LCs 9.2, 9.10, 12.10; Application Section 5.7.9
Findings:	<p>The QA Plan provides the requirements for quality control of analytical measurements. Section F.2 provides the quality control requirements for radiological effluent and environmental monitoring measurements including air monitoring, direct radiation monitoring, surface and groundwater sampling, and soil and sediment sampling. Section G provides the requirements for laboratory quality control. Further, Section H provides the quality control requirements for maintenance and calibration of radiological, environmental, and effluent monitoring instrumentation and equipment. The QA Plan specifically provides instructions for implementing RG 4.14, including guidance for quality of samples, lower limits of detection, and precision and accuracy of sample results. The QA/QC requirements specified in the QA Plan have been incorporated into the various sections of the EMP.</p>
Documents Reviewed:	EMP; QA Plan

Category:	Effluent Control and Environmental Protection
Topic:	Program Implementation
Reference:	IP 88045, Section 02.03
Requirement:	10 CFR Part 20, Subparts L & M; 10 CFR 40.65; LCs 9.2, 9.10, 10.1(D), 10.4(B); Application Sections 2.9.2, 5.7.7.1, 5.7.8.2
Findings:	<p>The licensee established and implemented effluent and environmental monitoring programs in accordance with license application commitments. The licensee installed six sampling stations, as presented on Technical Report Figure 2.9-24, "Air Particulate Sampling Locations." The six stations include the meteorological/upwind, north/Wesley residence, main office/Oshoto, east, south, and southwest stations. The southwest station is</p>

	<p>the background station per Section 2.9.2.4 of the License Application, because historical meteorological records indicate predominately westerly winds in the vicinity of the site. The Wesley residence station is the location of the maximally exposed offsite individual.</p> <p>During site tours, the inspectors visited most of the sampling stations, and the stations appeared to be fully functional, collecting the information specified in the license application. The inspectors reviewed site procedures and confirmed that the licensee had established procedures for collecting and analyzing all radionuclides specified in the license application.</p> <p>The licensee issued SERP 15-17 to relocate the north/Wesley residence and office/Oshoto stations closer to the site boundary, in part, due to noise complaints from local neighbors. During its review of the proposed change, the SERP considered the local terrain, dust loading from nearby roads, and animal impacts. The SERP concluded that the quality of air sampling data would not be impacted. The inspectors reviewed the licensee's SERP evaluation and concluded that the location changes would have minimal impact on the effluent and environmental monitoring programs.</p>
Documents Reviewed:	EMP; SERP 15-17 dated July 10, 2015

Category:	Effluent Control and Environmental Protection
Topic:	Radioactive Liquid Effluents
Reference:	IP 88045, Section 02.04
Requirement:	10 CFR Part 20, Subpart D; 10 CFR 20.2003; LCs 9.2, 10.4, 10.8, 10.9, 11.2; Application Sections 4.2, 5.7.8
Findings:	<p>The licensee established and implemented a program for monitoring radioactive liquid effluents. The licensee does not plan to release liquids directly to the environment during routine operations. The liquid effluent pathways include cleanup via reverse osmosis, disposal via DDW, or storage via storage pond. The licensee has an approved pathway—land application—that will not be used at this time. The licensee has operating procedures in place for the disposal equipment. The licensee has established procedures and controls for monitoring leaks and spills in the wellfields. The environmental monitoring program includes surface water sources, in part, to ensure that radioactive liquids are not present in the environment. Semi-annual effluent and environmental monitoring reports are required to be submitted to the NRC in accordance with regulation 10 CFR 40.65 and LC 10.1(D). License Condition 11.2 requires the licensee to conduct an analysis of annual doses to individual members of the public, including doses from liquid effluents. The licensee is required to report this analysis to the NRC in the annual report.</p>
Documents Reviewed:	EMP; Procedures SOP-O-3, SOP-O-4

Category:	Effluent Control and Environmental Protection
Topic:	Radioactive Airborne Effluents
Reference:	IP 88045, Section 02.05
Requirement:	10 CFR 20.1101(d); 10 CFR Part 20, Subpart D; LCs 9.2, 10.4, 10.9, 11.2, 12.7; Application Sections 4.1, 5.7.1, 5.7.7
Findings:	<p>In the license application, the licensee proposed to install and operate six environmental sampling stations. Each station would consist of an air particulate monitor, radon canister, and direct radiation monitor. In accordance with Section B.2 of the EMP, the licensee will conduct air particulate monitoring in each header house and within the CPP. The licensee will also conduct radon monitoring in each header house, 10% of the well heads, and DDW building. The number of radon sampling points will be at least 12, including six sample stations plus at least six other locations.</p> <p>The inspectors confirmed that the six airborne effluent sampling stations were in service. As noted above, each station included an air particulate sampler and radon canister. The remainder of the radon sampling points will be established and implemented when the licensee commences operation. The inspectors noted that the licensee plans to install a vacuum dryer, thus, stack monitoring will not be necessary. The licensee has developed a method for public dose assessment, using data collected at the sampling stations, as required by the license.</p> <p>Preoperational License Condition 12.7 required the licensee to provide additional information related to the development of an effluent and environmental monitoring program to account for all point and diffuse sources, and to discuss how radon progeny will be factored into the public dose assessment. By letter dated November 19, 2015 (ML15302A405), the NRC accepted the licensee's responses to this license condition. The licensee proposed air particulate and radon sampling for CPP occupied spaces, process vents, header houses, DDW house, wellfields, and spills. With regards to public dose assessments, the licensee plans to use field measurements in conjunction with MILDOS-AREA calculations to estimate downwind concentrations at the boundary of the unrestricted area.</p>
Documents Reviewed:	EMP; RPP

Category:	Effluent Control and Environmental Protection
Topic:	Procedures for Controlling the Release of Radioactive Liquid and Gaseous Effluents
Reference:	IP 88045, Section 02.06
Requirement:	LC 10.4; License Application 5.2.1
Findings:	License Condition 10.4(B) required the licensee to develop and implement SOPs for all non-routine operational activities including environmental monitoring. The EMP provides the instructions for implementing the effluent

	<p>and environmental monitoring programs. The inspectors reviewed these procedures and provided minor comments to the licensee for consideration. In summary, the inspectors confirmed that the licensee had established and implemented procedures for monitoring potential effluents.</p> <p>The inspectors noted that the licensee constructed and implemented engineering controls to minimize radioactive spills and releases. These controls included leak detection equipment, automatic shut-off signals, and alarms. Many of these design features were incorporated into operating procedures. The inspectors noted that the licensee had implemented these operating procedures, but continued to review and revise the procedures as needed.</p>
Documents Reviewed:	EMP: Operations Procedures

Category:	Effluent Control and Environmental Protection
Topic:	Identification and Resolution of Problems
Reference:	IP 88045, Section 02.07
Requirement:	LC 9.2, 9.10, 11.2; Application Sections 5.3.6, 5.7.9
Findings:	<p>License Application Section 5.7.9 states that the licensee will establish a QA program. The licensee's QA program is provided in the QA Plan. Section J of the QA Plan provides the instructions for preventive and corrective actions including identification and documentation of corrective actions. License Condition 9.10 reiterates the requirement for documentation of corrective actions.</p> <p>License Application Section 5.3.6 and QA Plan Section K.2 require an annual ALARA audit. The audit is supposed to include review of trends in public exposures. License Condition 11.2 requires the license to submit the annual program review to the NRC within 90 days of completion of the report.</p> <p>In summary, the licensee has established a program for identifying and resolving problems, including effluent and environmental monitoring program trends that impact public doses.</p>
Documents Reviewed:	QA Plan

Category:	Maintaining Effluents from Materials Facilities ALARA
Topic:	Management Commitment
Reference:	IP 87102, Section 02.01
Requirement:	10 CFR 20.1101(b); LC 9.2; Application Section 5.1.9

Findings:	<p>License Application Section 5.19 provides the ALARA program responsibilities. Licensee senior management are responsible for developing a strong commitment to, and continuing support for, the ALARA program. The licensee committed to implement a policy statement, annual audit program, continuing evaluation of the program, and sufficient training and briefings in the requirements of ALARA. This section also provides the responsibilities of the RSO, supervisors, and workers.</p> <p>Details about the implementation of the ALARA program are included in the RPP. This manual provides instructions for management responsibilities and the ALARA program evaluation. Additional details about the annual ALARA audit are provided in Section K.2 of the QA Plan. The Training Program includes ALARA instruction for new employees, and the annual refresher training includes discussion of the results of the annual ALARA audit.</p>
Documents Reviewed:	Training Program; RPP; QA Plan

Category:	Maintaining Effluents from Materials Facilities ALARA
Topic:	Audits and Appraisals
Reference:	IP 87102, Section 02.02
Requirement:	10 CFR 20.1101(c), LCs 9.2, 11.2; Application Section 5.3.6
Findings:	<p>The licensee committed to conduct an annual ALARA audit that includes a review of radiological survey and sampling data as well as review of trends in personnel exposures. Details about the ALARA program evaluation are included in Section D.5 of the RPP. Further, the QA Plan, Section K.2, provides details about the annual ALARA audit. License Condition 11.2 stipulates that the licensee will submit the annual review to the NRC. At the conclusion of the onsite inspection, the licensee had not completed its first annual ALARA review. The license plans to complete the first review in 2016.</p>
Documents Reviewed:	RPP; QA Plan

Category:	Maintaining Effluents from Materials Facilities ALARA
Topic:	Procedures, Engineering Controls, and Process Controls
Reference:	IP 87102, Section 02.03; RG 8.37, ALARA Levels for Effluents from Materials Facilities
Requirement:	LC 9.2; Application Sections 4.1, 4.2
Findings:	<p>As noted in Section 2 of RG 8.37, licensees should consider available engineering options to control the release of effluents to the environment. With regards to process and engineering controls, the licensee designed and constructed the plant with an emphasis on effluent control. These design features included controlled ventilation of tanks and plant airflow, sloping of the floors, floor curbs to contain spills, process controls to monitor for spills,</p>

	<p>alarms for notifying operators of abnormal or upset conditions, and interlocks to shut down equipment to minimize spills and releases.</p> <p>With regards to procedures, the RPP, Section D.5, discusses the ALARA program evaluation. This evaluation includes review of radiological survey and sample results as well as trends in personnel exposures and airborne concentrations. If negative trends are identified, the licensee is required to take action as necessary to address these negative trends.</p>
Documents Reviewed:	RPP

Category:	Maintaining Effluents from Materials Facilities ALARA
Topic:	Instrumentation
Reference:	IP 87102, Section 02.04
Requirement:	LCs 9.2, 9.10, 10.9; Application Section 5.7.7
Findings:	<p>The licensee committed to implement the guidance provided in RG 4.14, including the recommended environmental sampling program and lower limits of detection. The licensee incorporated these recommendations into the EMP for the various sample types (water, soil, air particulate, etc.). The licensee established programs for calibration of air sampling equipment. The calibration requirements for air samplers are provided in Section L, Radiological Laboratory Programs, of the RPP. The licensee established laboratory procedures for field sampling of water samples including measurement of pH, conductivity, and uranium, amongst other chemical constituents. The QA Plan provides the instructions for ensuring quality control of laboratory analyses including use of blanks, spikes, and duplicate samples. Section H of the QA Plan provides instructions for quality control for maintenance and calibration of radiological, environmental, and effluent monitoring instrumentation and equipment. In summary, the licensee established and implemented adequate programs and procedures for detecting and quantifying effluents.</p>
Documents Reviewed:	EMP; RPP; QA Plan; Laboratory Procedures L-1 through L-10

Category:	Maintaining Effluents from Materials Facilities ALARA
Topic:	Surveys and Effluent Monitoring
Reference:	IP 87102, Section 02.05
Requirement:	10 CFR 20.1302, 10 CFR 40.65; LC 12.7
Findings:	<p>License Condition 12.7 required the licensee explain how the quantity of the principle radionuclides from all point and diffuse sources will be accounted for, and verified through, surveys and monitoring. By letter dated November 19, 2015, the NRC found the licensee's proposals to be acceptable. In summary,</p>

	the licensee committed to monitor effluents and estimate the effluent quantities in accordance with the requirements of 10 CFR 40.65. For airborne particulates, the licensee committed to sample the CPP occupied spaces, header houses, DDW houses, and spills (via calculation). For radon, the licensee will sample eight locations around the CPP, header houses, DDW houses, and spills (also via calculation). Radon progeny will be monitored by assuming equilibrium with measured radon. The inspectors confirmed that the licensee implemented the instructions provided in the EMP and RPP.
Documents Reviewed:	EMP; RPP; NRC letter dated November 19, 2015 (ML15302A405)

Category:	Maintaining Effluents from Materials Facilities ALARA
Topic:	Worker Training
Reference:	IP 87102, Section 02.06
Requirement:	10 CFR 19.12; LCs 9.2, 9.6, 9.7, 9.10, 10.18; Application Sections 4.0, 5.5, 5.1.9
Findings:	The inspectors reviewed the training procedures and training records and determined that employees were being instructed in ALARA principles. Radiation safety training requirements were established and implemented as outlined in the ALARA program and training-related SOPs.
Documents Reviewed:	Training Program Sections D & F; Interviews with management and employees

Category:	Maintaining Effluents from Materials Facilities ALARA
Topic:	Changes
Reference:	IP 87102, Section 02.07
Requirement:	LCs 9.2, 9.4; Application Sections 5.1.9, 5.2.4
Findings:	In Section 5.2.4 of the application, the licensee committed to establish a SERP to evaluate proposed changes in the facility or process, changes in procedures, and new tests or activities with respect to whether they first require a license amendment. Further, LC 9.4 implements a change, test, and experiment license condition to allow the licensee to make certain changes without prior NRC approval. Section 5.1.9.2 of the application states that the RSO has the responsibility to review and approve plans for new equipment, process changes or operating procedures to ensure that the plans do not adversely affect the radiological aspects of the radiation protection program. Facility changes that may impact effluents or the ALARA program will be reviewed by the SERP, and the RSO is a member of the SERP. As an example, the licensee relocated two environmental sampling stations in accordance with SERP 15-17. The Manager of Health, Safety and Environmental Affairs, approved the change on behalf of the RSO.

	The licensee previously committed that all procedure changes will be reviewed and approved by the SERP. Instead, the licensee issued SERP 15-13 which allows certain minor procedure changes to be made without SERP approval. Significant procedure changes will still require SERP review and approval. The licensee concluded it could make this change based on the criteria established in LC 9.4.
Documents Reviewed:	SERP 15-13 dated May 1, 2015; SERP 15-17 dated July 10, 2015

Category:	Inspection of Transportation Activities
Topic:	Preparation of Packages for Shipment
Reference:	IP 86740, Section 02.01
Requirement:	10 CFR 71.5, 49 CFR Parts 171-178; LC 9.2
Findings:	<p>The licensee plans to perform three types of radioactive material shipments: (1) uranium-loaded resins in a tanker truck from the CPP to a licensed mill; (2) 11e.(2) wastes in closed containers from the CPP to a licensed disposal site; and (3) contaminated lab samples in strong-tight containers to an analytical lab for analysis. A two-page QA checklist will be used for each shipment to ensure compliance with the requirements of 40 CFR 173.475. A copy of the checklist will remain with the original shipping papers. The lab samples will be shipped as excepted packages and will not require completion of the QA checklist.</p> <p>The transportation procedures include requirements for marking and labeling each type of shipment. Procedures also specify the radiation surveys required for each shipment.</p> <p>Mine Unit 1 is located on non-public roads, and DOT shipping regulations do not apply to transport of radioactive material over these roads. If future mine units are located on public roads, the licensee is expected to ensure that appropriate DOT regulations are being followed for transport of radioactive material.</p>
Documents Reviewed:	RPP Section K

Category:	Inspection of Transportation Activities
Topic:	Delivery of Completed Packages to Carriers
Reference:	IP 86740, Section 02.02
Requirement:	10 CFR 71.5, 49 CFR Parts 171-178; LCs 9.2 & 12.11; Application Sections 4.1.1, 4.3.1.1, 4.3.3
Findings:	The licensee's procedures include instructions for specifying which shipping documents are required for each type of shipment. The procedures state that placards are required for resin and 11e.(2) shipments. Function-specific DOT

	HAZMAT training is outlined in the Training Plan and is appropriately documented as required by 49 CFR 172.704. At the conclusion of the preoperational inspection, the licensee had not completed the hands-on function-specific training for site workers. The inspectors will review this training during a future inspection. The licensee will use an outside company to transport resins and 11e.(2) material.
Documents Reviewed:	RPP Section K

Category:	Inspection of Transportation Activities
Topic:	Receipt of Packages
Reference:	IP 86740, Section 02.03
Requirement:	10 CFR 20.1906
Findings:	The licensee does not plan to receive packages containing quantities of radioactive material in excess of a Type A quantity; thus, the licensee does not plan to implement procedures for receiving and opening packages in accordance with 10 CFR 20.1906.
Documents Reviewed:	None

Category:	Inspection of Transportation Activities
Topic:	Records and Reports
Reference:	IP 86740, Section 02.04
Requirement:	10 CFR 20.2202, 49 CFR 171.15 & 171.16; LCs 9.2 & 12.11; Application Section 7.5.4.1
Findings:	The licensee's procedures included instructions for retaining DOT records for each shipment. The transportation procedure requires these records to be maintained for a minimum of three years in accordance with DOT regulations. Incident reporting requirements are outlined in Section I of the ERP.
Documents Reviewed:	RPP Section K; ERP Section I

Category:	Inspection of Transportation Activities
Topic:	General License Requirements
Reference:	IP 86740, Section 02.05
Requirement:	10 CFR Part 71, Subpart C; 49 CFR 173.410-426
Findings:	This inspection area is not applicable because the licensee does not plan to use the general license requirements provided in 10 CFR Part 71, Subpart C.

Documents Reviewed:	None
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Category:	Inspection of Transportation Activities
Topic:	Management Controls
Reference:	IP 86740, Section 02.06
Requirement:	10 CFR 71.5, 49 CFR Parts 171-178; LCs 9.2 & 12.11; Application Sections 4.1.1, 4.3.1.1, 4.3.3, 7.5.4.1.
Findings:	Sections C & K of the RPP outline the responsibilities for ensuring that all radioactive shipments are prepared and shipped in accordance with all applicable regulations. The RSO will be responsible for the appropriate DOT training, paperwork, and surveys performed for radioactive material shipments.
Documents Reviewed:	RPP Sections C & K

Category:	Inspection of Transportation Activities
Topic:	Indoctrination and Training Program
Reference:	IP 86740, Section 02.07
Requirement:	10 CFR 19.12, 10 CFR 71.5, 49 CFR 172 Subpart H; LCs 9.2 & 12.11; Application Sections 5.6 & 7.5.4.1
Findings:	The inspectors reviewed the licensee's training program for HAZMAT employees. The training consisted of interactive computer training, RSO discussions using PowerPoint slides, and hands-on function-specific training. An exam is given to each HAZMAT employee to ensure understanding of the requirements. Training is given within 90 days of hire or reassignment to a new position requiring knowledge of radioactive shipping, and every three years thereafter. The training documentation maintained by the licensee meets the requirements of 49 CFR 172.704(d). At the conclusion of the preoperational inspection, the licensee had not completed the hands-on function-specific training for site workers. The licensee is aware that this training has to be completed prior to its first shipment of radioactive material.
Documents Reviewed:	RPP Sections C, D & K; Training Program Sections D & E

Category:	Inspection of Transportation Activities
Topics:	QA/QC program
Reference:	IP 86740, Sections 02.08 through 02.12
Requirement:	10 CFR 71.5, 49 CFR 173.475; LC 9.2

Findings:	The licensee will implement the quality control requirements provided under 49 CFR 173.475, prior to each shipment of resin or 11e.(2) material. The licensee developed a checklist to ensure that all aspects of the quality control program are implemented.
Documents Reviewed:	RPP Section K

Category:	Inspection of Transportation Activities
Topic:	Records, Reports, and Notifications
Reference:	IP 86740, Section 02.13
Requirement:	10 CFR 71.91(a), 10 CFR 20.1906(d); LCs 9.2 & 12.11; Application Section 7.5.4.1
Findings:	The inspectors reviewed the measures taken to ensure that records of shipments are maintained on file for three years and that the records contain the required information. Section I of the ERP describes the procedures for reporting incidents related to transportation of radioactive material. Documentation requirements are described in Sections D and K of the RPP.
Documents Reviewed:	RPP Sections D & K

Category:	Radioactive Waste Management
Topic:	Management Controls for Waste Classification, Shipping and Burial
Reference:	IP 88035, Section 02.01
Requirement:	LCs 9.2, 9.7, 9.9, 9.10, 10.4, 10.8, 12.5, 12.12; Application Sections 1.10, 3.0, 4.2, 4.3
Findings:	The licensee will dispose of liquid radioactive waste through the DDW. Solid radioactive waste will be transferred to an NRC-licensed 11e.(2) disposal site. Procedure RPP (Sections C, H, and K) specify the responsibilities and instructions for classifying, shipping, and disposing wastes. The RSO has overall responsibility for the classification and shipment of solid wastes. The plant manager is responsible for proper disposal of liquid wastes via the DDWs.
Documents Reviewed:	Procedures SOP-O-3, SOP-O-4; EMP Section G; RPP Section C, H & K; Training Plan Sections D & E

Category:	Radioactive Waste Management
Topic:	Quality Assurance
Reference:	IP 88035, Section 02.02
Requirement:	LCs 9.2, 12.10; Application Section 5.7.9

Findings:	The inspectors verified that Section K of the QA Plan describes procedures for periodic audits to: (1) verify that the QA program is effectively implemented; (2) verify compliance with applicable rules, regulations and license requirements; and (3) protect employees by maintaining effluent releases and exposures ALARA. The RSO has the primary responsibility for implementing the QA/QC programs.
Documents Reviewed:	QA Plan Section K

Category:	Radioactive Waste Management
Topic:	Waste Classification
Reference:	IP 88035, Section 02.03
Requirement:	LCs 9.2, 9.7, 9.9, 9.10, 10.4, 10.8, 12.5, 12.12; Application Sections 1.10, 3.0, 4.2, 4.3
Findings:	Procedures in RPP Sections C, H, and K provide the waste classification instructions for 11e.(2) solid byproduct material. The licensee's contract with the 11e.(2) disposal site dictates that the characteristics of the solid 11e.(2) waste allowed for disposal. Procedures SOP-O-3 and SOP-O-4 describe the methods for liquid waste disposal via the DDWs.
Documents Reviewed:	Procedures SOP-O-3, SOP-O-4; EMP Section G; RPP Section C, H & K; Training Plan Sections D & E; 11e.(2) disposal agreement

Category:	Radioactive Waste Management
Topic:	Waste Form and Characterization
Reference:	IP 88035, Section 02.04
Requirement:	LCs 9.2, 9.7, 9.9, 9.10, 10.4, 10.8, 12.5, 12.12; Application Sections 1.10, 3.0, 4.2, 4.3
Findings:	Radiation Protection Program Sections C, H, and K provide the waste classification instructions for 11e.(2) solid byproduct material. The licensee's contract with the 11e.(2) disposal site dictates the characteristics of the solid 11e.(2) waste allowed for disposal. Procedures SOP-O-3 and SOP-O-4 describe the methods for liquid waste disposal in the DDWs.
Documents Reviewed:	Procedures SOP-O-3, SOP-O-4; EMP Section G; RPP Section C, H & K; Training Plan Sections D & E; 11e.(2) disposal agreement

Category:	Radioactive Waste Management
Topic:	Waste Shipment Labeling

Reference:	IP 88035, Section 02.05
Requirement:	10 CFR 71.5; LCs 9.2, 9.9, 12.11; Application Sections 4.0 & 7.5.4.1
Findings:	Procedure RPP, Section K, provides the waste packaging, preparation, and loading instructions for 11e.(2) byproduct material. In particular, the byproduct material marking, labeling, and placarding requirements are provided in Section K.7.
Documents Reviewed:	RPP Section K

Category:	Radioactive Waste Management
Topic:	Tracking of Waste Shipments
Reference:	IP 88035, Section 02.06
Requirement:	10 CFR 71.5; LCs 9.2 & 12.11; Application Sections 4.0 & 7.5.4.1
Findings:	Procedure RPP, Section K, provides the waste packaging, preparation, and loading instructions for 11e.(2) byproduct material. The waste shipments include providing the shipper a copy of the waste manifest documentation. The shipping papers include 24-hour emergency response information, in case of an incident during transportation.
Documents Reviewed:	RPP Section K; shipping documentation

Category:	Radioactive Waste Management
Topic:	Disposal Site License Conditions
Reference:	IP 88035, Section 02.07
Requirement:	LCs 9.2 & 9.9; Application Section 4.3
Findings:	License Condition 9.9 requires the licensee to have a valid 11e.(2) waste disposal agreement with a licensed disposal facility. The inspectors reviewed the licensee's disposal contract and found it to be sufficient to meet the requirements of the license.
Documents Reviewed:	11e.(2) disposal agreement; RPP Section K

Category:	Radioactive Waste Management
Topic:	Management Controls and Surveys for Solid Waste Storage
Reference:	IP 88035, Section 02.08
Requirement:	LCs 9.2, 9.7, 10.4; Application Section 4.3.1.1

Findings:	<p>The licensee has established procedure controls for radiological surveys of solid wastes in storage. These surveys are considered part of the routine plant surveys. The RSO will maintain oversight of these surveys as part of the routine program reviews as specified in RPP, Section D.</p> <p>Solid 11e.(2) waste bins are stored adjacent to the CPP in a radiologically restricted area.</p>
Documents Reviewed:	RPP Sections E & H

Category:	Radioactive Waste Management
Topic:	Radioactive Solid Waste
Reference:	IP 88035, Section 02.09
Requirement:	10 CFR 20.2001; LC 9.2; Application Section 4.3.1.1
Findings:	<p>The licensee uses closed transport containers for storage and shipment of solid 11e.(2) waste. Solid waste is shipped off-site once the transport container is full. The container is stored in a controlled area adjacent to the CPP.</p> <p>Prior to shipment, 11e.(2) wastes are analyzed to determine radiological isotopes and quantities of radioactivity. The licensee has a procedure for determining the radioactivity in the waste containers. This is a requirement of the 11e.(2) disposal agreement.</p>
Documents Reviewed:	RPP Section K; 11e.(2) disposal agreement

Category:	Radioactive Waste Management
Topic:	Waste Burial
Reference:	IP 88035, Section 02.10
Requirement:	LC 9.9; Application Section 4.3.1
Findings:	This program area does not apply to this licensee because the licensee does not plan to bury radioactive material onsite.
Documents Reviewed:	Byproduct Material Disposal Agreement

Category:	Radioactive Waste Management
Topic:	Adequacy of Storage Area
Reference:	IP 88035, Section 02.11

Requirement:	LC 9.2; Application Section 4.3.1.1
Findings:	<p>The licensee does not have a procedure specifically for the control of solid wastes being stored within the plant. The storage of solid wastes is considered part of general plant housekeeping. The restricted area access is controlled by postings, fencing, gates, and locked doors. Solid wastes will be stored in waste containers identified with container markings and placards.</p> <p>With regard to control of wastes, the inspectors observed that:</p> <ul style="list-style-type: none"> • DDWs have keypad locks for entry • Locations for the intermodals appear to be stable for placement of the waste containers • Trash cans used for temporary storage of radioactive waste are marked, and employees are trained to distinguish between common trash and radioactive material trash
Documents Reviewed:	RPP Section H

Category:	Radioactive Waste Management
Topic:	Earthen (Surface) Waste Retention Systems
Reference:	IP 88035, Section 02.12
Requirement:	LCs 10.8; Application Sections 4.22; Addendum 3.1-A
Findings:	<p>The inspectors verified that that the surface impoundment for liquid byproduct material was constructed in accordance with design requirements. The inspectors reviewed the confirmation letter dated October 29, 2015, and signed by Doug Graves, PE (Wyoming), President of TREC DB, LLC, the contractor for the licensee that constructed the impoundment. The inspectors verified that construction of the surface impoundment was approved by the EPA.</p>
Documents Reviewed:	Letter dated October 29, 2015

Category:	Emergency Preparedness
Topic:	Program Changes, Implementing Procedures, Training and Staffing, Offsite Support Agencies, Test Drills and Exercises, Emergency Equipment and Facilities, and Audits and Assessments
Reference:	IP 88050
Requirement:	LCs 9.2, 12.2, 12.11; Application Sections 3.2.8.1, 5.2.1, 5.5
Findings:	<p>The licensee has several emergency implementing procedures in the ERP that include the following:</p> <ul style="list-style-type: none"> • Medical emergencies • Fire and explosion emergencies • Electrical and gas emergencies

- Chemical emergencies
- Natural disasters
- Security plan
- Radiological emergencies
- Transportation emergencies
- Emergency evacuation procedures
- Emergency reporting
- Chemical emergency response guidance

Copies of the emergency response procedures are maintained in the CPP and site offices.

The Plant Safety Committee requirements are outlined in Section B.9 of the ISP. The Plant Safety Committee consists of the Safety and Environmental Coordinator and at least four non-supervisory members whose terms shall last one year. The Plant Safety Committee Safety Committee meetings are held quarterly and more often as needed.

The Safety/Environmental Coordinator has developed a training program for all new and existing employees. A copy of the training material was provided to the inspectors. The inspectors reviewed the handbook and noted that it covered a broad range of topics involving industrial and occupational safety. Employee training is tracked on a spreadsheet. Annual refresher training is required for industrial and occupational safety.

The licensee has coordinated emergency response operations with the Local Emergency Planning Committee, the Crook County Sheriff Department, local fire departments, and local ambulance service. These services attended a site orientation at the facility which included an overview of facility operation, personnel staffing, chemical and fire hazards at the site, available fire water capability, security issues, and important contact phone numbers. The licensee also met with local hospitals to assess their capabilities and to inform the facilities of the type of injuries that could occur and the minimal potential for radiologic contamination of persons injured at the facilities.

The licensee performed a fire drill during the inspection. The licensee will perform fire drills twice a year in accordance with ERP Section C.

Inspectors observed automated external defibrillator in the plant, a first aid kit in the office, and a rescue basket for confined space and fall injury in the plant. The licensee also has fire extinguishers, a truck that could be used to transport water, and fall protection rescue equipment such as carabineers and related equipment.

The licensee established a spill response procedure for responding to spills of radioactive and other hazardous liquids. Spill kits had sufficient supplies to respond to radiological and chemical spills.

Documents Reviewed:

ERP; Training Plan Sections C & D; RPP Sections H & L; ISP Section B

Category:	Fire Protection
Topic:	Program Implementation, Annual Inspection, Identification and Resolution of Problems
Reference:	IP 88055
Requirement:	29 CFR Part 1910; LC 10.4; Application Sections 3.2.8.1 & 7.5.3
Findings:	The licensee has established adequate fire protection procedures in ISP, Section M. Additional procedures in the ISP address hazard control, electrical safety, hazard communication, and evacuation/construction safety. The licensee established a routine inspection program for fire extinguishers.
Documents Reviewed:	ISP Sections B, C, E, G, K & M