



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

October 17, 2024

Tate Hagman, Restoration Manager
Crow Butte Resources, Inc.
86 Crow Butte Road
Post Office Box 169
Crawford, NE 69339-0169

SUBJECT: CROW BUTTE RESOURCES, INC. NRC INSPECTION REPORT
040-08943/2024-001

Dear Tate Hagman:

This letter refers to the routine the U.S. Nuclear Regulatory Commission (NRC) inspection conducted from September 17-18, 2024, at your Crow Butte Project near Crawford, Nebraska. This inspection examined activities conducted under your license as they relate to public health and safety, the common defense and security, and to confirm compliance with the Commission's rules and regulations and the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, measurements of radiation levels, and interviews with personnel.

The inspection findings were discussed with you and other members of your staff at the conclusion of the onsite inspection on September 18, 2024. The enclosed report presents the results of this inspection. No violations were identified, and no response to this letter is required.

In accordance with 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 Agencywide Documents Access and Management System (ADAMS), accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the public without redaction.

Should you have any questions concerning this matter, please contact Dr. Robert Evans, Senior Health Physicist, at (817) 200-1234, or the undersigned at (817) 200-1249.

Sincerely,



Brookhart, Lee signing on behalf
of Warnick, Gregory
on 10/17/24

Gregory G. Warnick, Chief
Decommissioning, ISFSI and Operating
Reactor Branch
Division of Radiological Safety and Security

Docket No. 040-08943
License No. SUA-1534

Enclosure:
NRC Inspection Report 040-08943/2024-001
w/Attachment: Supplemental Inspection Information

cc:
Becki Harisis, Nebraska DHHS
Bryan Miller, Nebraska DHHS

CROW BUTTE RESOURCES, INC. NRC INSPECTION REPORT 040-08943/2024-001 –
DATED OCTOBER 17, 2024

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DOCUMENT NAME: CROW BUTTE RESOURCES, INC. NRC INSPECTION REPORT 040-08943/2024-001
ADAMS ACCESSION NUMBER: **ML24285A187**

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**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket No. 040-08943

License No. SUA-1534

Report No. 040-08943/2024-001

Licensee: Crow Butte Resources, Inc.

Location: Crow Butte Project
Dawes County, Nebraska

Dates: September 17-18, 2024

Inspectors: Robert Evans, Senior Health Physicist
Decommissioning, ISFSI, and Operating Reactor Branch
Division of Radiological Safety and Security, Region IV

Thomas Lancaster, Hydrogeologist
Uranium Recovery and Materials Decommissioning Branch
Division of Decommissioning, Uranium Recovery, and
Waste Programs
Office of Nuclear Materials Safety and Safeguards

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Office of Nuclear Materials Safety and Safeguards

Approved by: Gregory G. Warnick, Chief
Decommissioning, ISFSI and Operating Reactor Branch
Division of Radiological Safety and Security, Region IV

Attachment: Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Crow Butte Resources, Inc.
NRC Inspection Report 040-08943/2024-001

The U.S. Nuclear Regulatory Commission (NRC) performed a routine, announced health and safety inspection from September 17-18, 2024, at the Crow Butte Project near Crawford, Nebraska. The inspection included observation of activities, interviews with site personnel, independent radiological measurements, and review of records. The inspectors concluded that the licensee conducted site activities in accordance with license and regulatory requirements.

Groundwater and Water Management

- The licensee conducted groundwater and water management activities in accordance with license requirements. The licensee maintained an inward hydraulic gradient in the mine units as required by the license. (Section 1.2)

Assessment of Dryer and Yellowcake Packaging Operations

- The licensee occasionally conducted dryer and drum packaging operations. Based on procedure reviews and operator interviews, the inspectors concluded that drying and drumming operations were being conducted in accordance with license requirements. (Section 2.2)

Radiation Protection

- The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. The licensee's radiation protection program was commensurate with the risks involved based on existing licensee activities. Routine site inspections were conducted and documented by the licensee in accordance with license conditions. (Section 3.2)

Radioactive Waste Management and Transportation

- The evaporation ponds were being inspected in accordance with procedures and license requirements. Wastewater and deep disposal well activities were conducted in accordance with site procedures. Radioactive wastes were stored with an emphasis on security. Radioactive material was transported in accordance with regulatory requirements. (Section 4.2)

Effluent Control and Environmental Protection

- The licensee conducted effluent and environmental monitoring and reported the results to the NRC in semi-annual reports in accordance with license requirements. Per the licensee's records, site operations had a negligible effect on public doses. The licensee monitored and recorded well and manifold pressures and flows, and the licensee continued to monitor for wellfield excursions. The licensee continued to implement a well casing mechanical integrity test program in accordance with license requirements. (Section 5.2)

Emergency Preparedness and Fire Protection

- The licensee established and implemented programs for emergency responses, fires, and radiological spills. Since the previous inspection, no radiological event or spill occurred that was required to be reported to the NRC. (Section 6.2)

Management Organization and Controls

- The licensee's organizational structure was sufficient for the work in progress. Annual program reviews, annual land use surveys, and the Additional Protocol requirements were being implemented in accordance with license and regulatory requirements. (Section 7.2)

Report Details

Site Status

Crow Butte Resources, Inc. (the licensee), started commercial operations in 1991. The facility is an in-situ recovery site that extracted uranium from sandstone aquifers at depths ranging from 400 to 800 feet below ground surface. In 2018, the licensee reduced operations and entered the care and maintenance mode of operations. Since the previous inspection, conducted in October-November 2023 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML23324A176), the site continued to remain in the care and maintenance mode.

At the time of the inspection, site activities included maintaining wellfield flows with reverse osmosis, ion exchanger, and dryer operations as needed. The licensee was not processing uranium or conducting yellowcake drying operations at the time of the inspection. The licensee's staff indicated that it had not commenced with construction activities at the Marsland Expansion Area.

The site has 11 mine units (MUs). Mine unit MU-1 was previously restored and released. Mine units MU-2 through MU-6 were in the stability monitoring mode of operation. Mine units MU-7 and MU-8 were being actively restored. Mine units MU-9 through MU-11 were in standby.

1 Groundwater and Water Management at Uranium Recovery and 11e.(2) Byproduct Material Facilities (NRC Inspection Procedure [IP] 89020)

1.1 Inspection Scope

To determine if groundwater and water management activities are protective of workers, members of the public, and the environment. To determine if groundwater and water management activities comply with license and regulatory requirements.

1.2 Observations and Findings

As of April 2018, the licensee ceased injection of lixiviant into the mine units. At the time of the inspection, mine unit MU-1 had been restored and its related wells and header houses had been decommissioned. Mine units MU-2 through MU-6 were in stabilization monitoring. No flow was being injected into or extracted from these mine units.

License condition 10.1.6 (ML20324A071) requires the licensee to "maintain an overall inward hydraulic gradient within the perimeter monitoring ring starting when lixiviant is first injected in the production zone and continuing until the initiation of the stabilization period." Mine units MU-7 and MU-8 were in active groundwater restoration with both injection and production (extraction) flow in progress. At the time of the inspection, the production flow was 530 gallons per minute (gpm), while the injection flow was 457 gpm. Mine units MU-9, MU-10, and MU-11 were in the groundwater extraction mode. No injection flow was being pumped to these wellfields. Fluid was being extracted from these three mine units at approximately 70-80 gpm. In summary, the licensee continued to maintain an inward hydraulic gradient in these wellfields as required by the license.

The inspectors observed the results of the licensee's simulated groundwater flow conditions that was submitted to the NRC on February 28, 2024 (ML24060A020 and ML24060A021). The simulation was generated from a groundwater flow model that was

calibrated to historical groundwater level elevations. The model results included groundwater elevations and flow direction as of February 2024, given the production and injection flow rates in each mine unit at that time. The simulation provided reasonable assurance that an overall inward hydraulic gradient was being maintained at the mine units that were not in stability monitoring. The licensee indicated that the groundwater model will be included in their upcoming license renewal application.

1.3 Conclusions

The licensee conducted groundwater and water management activities in accordance with license requirements. The licensee maintained an inward hydraulic gradient in the mine units as required by the license.

2 Assessment of Dryer and Yellowcake Packaging Operations (IP 89025)

2.1 Inspection Scope

To determine if dryer and yellowcake packaging operations are protective of workers, members of the public, and the environment. To determine if dryer and yellowcake packaging operations comply with license and regulatory requirements.

2.2 Observations and Findings

The requirements for the yellowcake dryer are provided in the license application and condition 10.2.1 of the license. The licensee operated the dryer about once per year to process uranium recovered during restoration of mine units and during processing of municipal water treatment resins. The most recent dryer and drumming operations occurred in December 2023.

The inspectors reviewed and walked down procedure CBR-SOP-019, "Yellowcake Dryer Operation and Maintenance," revision 24, dated March 15, 2017, with an operator. The procedure provided instructions for the dryer's emission controls and for maintaining negative pressures during drying operations, as required by license condition 10.2.1. The inspectors noted that the licensee complied with the annual production quantity limit specified in license condition 10.2.3.

The licensee continued to process municipal water treatment system resins in accordance with the guidance provided in NRC Regulatory Issue Summary 2012-06, "NRC Policy Regarding Submittal of Amendments for Processing of Equivalent Feed at Licensed Uranium Recovery Facilities." As noted in NRC Inspection Report 2023-001 (ML23324A176), the licensee had established procedures for processing these resins in accordance with the guidance provided in the Regulatory Issue Summary.

The licensee processed municipal water treatment system resins six times in 2023-2024. The NRC reviewed the licensee's records for these activities. The records included NRC Forms 741, "Nuclear Material Transaction Reports," for the transfers of the uranium. The uranium was subsequently added to the process circuit for drying and drumming.

2.3 Conclusions

The licensee occasionally conducted dryer and drum packaging operations. Based on procedure reviews and operator interviews, the inspectors concluded that drying and drumming operations were being conducted in accordance with license requirements.

3 **Radiation Protection at Uranium Recovery and 11e.(2) Byproduct Material Facilities (IP 89030)**

3.1 Inspection Scope

To ensure that the licensee effectively manages radiation protection to minimize the potential for exposures to workers and the public. To ensure that licensed radiation protection activities comply with license and regulatory requirements.

3.2 Observations and Findings

a. Occupational Exposures

The inspectors reviewed the licensee's occupational exposure records for calendar year 2023 through the first quarter of 2024. Occupationally monitored employees included plant and wellfield operators, as well as, safety and environmental staff including health physics, laboratory, and maintenance employees. Employees were monitored for external exposure using optically stimulated luminescence dosimeters which were exchanged on a quarterly basis. These results were reported as deep dose equivalent exposures. The highest external exposures assigned to an individual for each calendar year were as follows: (1) 33 millirem for 2022; (2) 40 millirem for 2023; and (3) 17 millirem for the first half of 2024. These external exposures were well below the NRC's annual limit of 5,000 millirem as specified in Title 10 to the *Code of Federal Regulations* 10 CFR 20.1201(a).

The licensee conducted particulate and radon-222 air sampling, in part, for assessment of internal exposures. The inspectors reviewed the licensee's sampling results for 2023-2024. The inspectors confirmed the licensee conducted sampling at the required intervals. The appropriate exposures were calculated and recorded for each employee. The inspectors also noted the placement of radon-222 air samplers during site tours. Samplers were placed appropriately and protected from the elements in containers.

The inspectors reviewed the licensee's bioassay sampling results since the previous inspection. Bioassay samples were collected quarterly. Except for the planned spiked samples required by the radiation protection plan, no bioassay sample result was above the lower limit of detection for uranium or the 15 micrograms per liter action level for investigation. Inspectors reviewed the selection, preparation, and shipment of bioassay samples by the radiation safety officer (RSO). The RSO was knowledgeable, had the necessary containers and labels, and followed the bioassay procedure.

Internal doses, or committed effective dose equivalent (CEDE) doses, were assigned based on radon monitoring, uranium particulate monitoring, and bioassay results. The average CEDE assigned to employees for 2023 average was 65 millirem and the maximum CEDE was 91 millirem. The average CEDE assigned to employees for the

first half of 2024 was 26 millirem and the maximum CEDE was 40 millirem. All CEDE results were well below regulatory limits.

License condition 10.1.7 requires annual in-plant air particulate sampling for alpha and beta-emitting radionuclides. The inspectors reviewed the sampling records for in-plant particulate and radon sampling and found them in compliance with license requirements.

b. Radiation Work Permits and Respiratory Protection

Three radiation work permits were issued since the last inspection. The inspectors reviewed the radiation work permits and concluded that the three permits provided sufficient control of radiological hazards for their corresponding assigned tasks.

The licensee maintained a respiratory protection program in case it is needed in the future. All individuals who might wear respiratory protection were currently medically qualified for respirator use and had current respiratory fit test records on file. The inspectors examined the respirators and found them to be in good condition. When respirators were used, breathing zone sampling was performed with protection factors to calculate employee dose. Annual respiratory protection refresher training was provided.

c. Radiation Protection Surveys

The inspectors reviewed the licensee's routine contamination and gamma radiation surveys conducted since the previous inspection. Monthly gamma radiation surveys were conducted in the central processing plant, wellfields, and deep disposal wells. Contamination spot checks were conducted throughout the facility. Surveys of items to be free released from the facility were being performed. No significant contamination problems were identified at the facility based on the records reviewed.

d. Radiation Safety Instrumentation

The inspectors reviewed the licensee's records of operability, calibration, and maintenance of survey instruments. The inspectors verified that licensee instruments used during inspection were operational and within calibration. The licensee used an authorized offsite contractor to perform annual calibrations of radiation safety instrumentation. Instrument efficiencies were determined by the licensee on a monthly basis. The survey meters examined by the inspectors were in calibration and were used appropriately by the licensee's employees. Records reviewed by inspectors were complete and were retained in accordance with regulations and licensee procedures.

e. Training

The inspectors reviewed the licensee's initial, contractor, and new employee radiation safety training, also known as the new miner training and refresher training programs. All employees were provided with initial hazard communications, initial radiation protection training, and annual refresher training. Contractors received initial radiation protection training. Annual refresher training included job hazard analysis, confined space entry, fire protection, and emergency response. All licensee staff completed annual refresher training in May 2023 and May 2024. The inspectors determined that the licensee's training programs met license and regulatory requirements.

f. Routine Site Inspections

The inspectors reviewed routine inspections performed by the licensee since the previous inspection. As required by license conditions 9.2 and 9.7, the licensee conducted and documented daily walk-throughs of all work and storage areas of the facility, in part, to ensure that good radiation practices were being followed. The inspectors reviewed the records for 2023-2024. Attributes inspected included ventilation system operations, visible spills, radiological signs and boundaries, container labeling, and general housekeeping.

g. (Closed) Violation 040-08943/2023-01-01: Failure to radiologically survey personal effects

During the 2023 inspection (ML23324A176), a violation was identified related to the licensee's failure to ensure that items which were hand carried into the restricted areas were surveyed before the items were removed from the restricted areas. Upon notification of the violation, the RSO: (1) revised procedure CRB-RPP-005, "Contamination Control," revision 7, to include the survey requirements, (2) updated postings and forms at the personnel monitoring station to reflect the requirement to survey hand carried items; and (3) revised the training program to include surveys of hand carried items. The inspectors confirmed the implementation of these corrective actions during this inspection.

h. Independent Radiological Surveys

During site tours, the inspectors conducted independent radiological surveys using a Radeye G survey meter calibrated to cesium-137 (serial number 30901, calibration due date of 1/19/25). The inspectors conducted the survey, in part, to verify radiation area postings. With a background of roughly 0.014 millirem per hour (mrem/hr), the highest measured result was the injection filters at 9-10 mrem/hr. This area was correctly posted as a radiation area. The inspectors did not identify any area with measurements exceeding 5 mrem/hr that was not posted as a radiation area.

3.3 Conclusions

The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. The licensee's radiation protection program was commensurate with the risks involved based on existing licensee activities. Routine site inspections were conducted and documented by the licensee in accordance with license conditions.

4 Radioactive Waste Management and Transportation at Uranium Recovery and 11e.(2) Byproduct Material Facilities (IP 89035)

4.1 Inspection Scope

To ensure that the licensee effectively manages radioactive wastes and safely transported radioactive material. To ensure that the radioactive waste management and transportation programs comply with license and regulatory requirements.

4.2 Observations and Findings

a. Review of Evaporation Ponds

The licensee maintained three commercial and two research and development ponds. All ponds have leak detection systems. The pond monitoring program consisted of daily, weekly, monthly, and quarterly inspections, in addition to annual technical evaluations. The pond monitoring program was outlined in procedure CBR-EMP-002, "Evaporation Pond Monitoring," revision 9, dated April 23, 2020.

The inspectors observed an operator performing and documenting the daily and weekly pond inspections in accordance with the applicable procedure. The daily inspection included measuring freeboard water levels and verifying pond embankments were being maintained. Weekly inspections included verifying that the perimeter fences and pond liners were in good condition, verifying there were no exposed sediments that may become airborne, and measuring the water levels in the leak detection systems. The operator completed the monitoring procedure and documented the results appropriately. The inspectors determined that the licensee had procedures in place for pond inspections that met the requirements specified in license conditions 10.2.5 and 11.2.1.

b. Verification of Liner Leaks

The inspectors reviewed the records for the three commercial and two research and development ponds since the last inspection in 2023. These records included the water level freeboard, pond embankment and perimeter fence integrity, exposure status of pond sediment, and water levels in the leak detection systems which were either measured or observed based on the schedules and procedures as described in procedure CBR-EMP-002. The most recent laboratory analytical results for the shallow aquifer groundwater monitoring wells in the vicinity of the ponds were also reviewed during the inspection, for indications of pond leakage. The inspectors concluded that there have been no evidence of leaks or sediment exposures in the on-site ponds, and the pond embankments and perimeter fences were in good condition.

c. Wastewater Disposal Activities

License condition 10.2.6 provides the requirements for management of liquid effluents from process buildings and other process waste streams. At the time of the inspection, the licensee was returning the liquid effluents to the process circuit, transferring the liquid effluent to the evaporation ponds, and/or disposing of the liquid effluents via deep disposal wells. The combined flow for the two deep disposal wells was approximately 150 gpm. A small portion of the wastewater, approximately 12 gpm, was being routed to Pond 4. The licensee was not disposing of liquid wastes via land application.

The inspectors toured the central processing plant, reverse osmosis building, and control room to confirm that the licensee operated the equipment in accordance with procedural requirements. Pressures, flow rates, and tank levels were found to be in accordance with procedure limits, and routine tests were being conducted in accordance with procedure requirements.

d. Radioactive Waste Storage

The inspectors observed two labeled radwaste collection bins located within the main plant and one bin in the reverse osmosis building. The collected 11e.(2) byproduct material wastes were periodically transferred to the facility's centralized waste storage bins staged within the restricted area with surrounding fences and locked entries. The 11e.(2) byproduct material generated at the in-situ leach facilities includes filters, personal protection equipment, spent resin, and piping. The inspectors confirmed that the areas were appropriately posted with caution signs and controlled in accordance with regulatory and license requirements.

e. Transportation of Radioactive Material

Historically, the licensee shipped several types of radioactive material. These shipments included drums of yellowcake material to a conversion facility, intermodal containers of 11e.(2) solid waste to a licensed disposal site, minimally contaminated stripped resins for return to a customer, and 11e.(2) samples to a licensed laboratory for analysis. The 11e.(2) samples, consisting mostly of restoration monitoring well samples, were sent to two laboratories which each possessed a specific license that authorized possession of 11e.(2) material. The inspectors verified the licenses for both laboratories were in effect and current. No yellowcake shipments occurred since the previous inspection.

The inspectors verified that the licensee had a valid solid 11e.(2) waste disposal agreement in place, as required by license condition 9.9. The disposal agreement is effective through December 31, 2030. Two solid 11e.(2) waste shipments, totaling 60 cubic yards, were shipped for disposal since the previous inspection.

The inspectors reviewed a representative sample of shipping papers for the laboratory sample shipments to ensure compliance with U.S. Department of Transportation regulations and did not identify any items of concern.

4.3 Conclusions

The evaporation ponds were being inspected in accordance with procedures and license requirements. Wastewater and deep disposal well activities were conducted in accordance with site procedures. Radioactive wastes were stored with an emphasis on security. Radioactive material was transported in accordance with regulatory requirements.

5 Effluent Control and Environmental Protection at Uranium Recovery and 11e.(2) Byproduct Material Facilities (IP 89045)

5.1 Inspection Scope

To ensure that the licensee effectively controls, monitors, and quantifies releases of radioactive materials in liquid, gaseous, and particulate forms to the environment. To ensure that effluent control and environmental protection programs comply with license and regulatory requirements.

5.2 Observations and Findings

a. Environmental and Effluent Monitoring

License condition 11.2.3 requires the licensee to implement an effluent and environmental monitoring program, and license condition 11.1.1.D requires the licensee to submit the results to the NRC in semi-annual reports. The inspectors reviewed the licensee's reports and related data submitted since the October-November 2023 inspection (ML24044A032 and ML24233A232). Since the last inspection, the licensee continued to implement the effluent and environmental programs and report the results to the NRC.

The effluent monitoring program consisted of measurement or calculation of air particulates, radon, and radon progeny releases from the plant, header houses, and wellfields. The licensee conducted yellowcake drying operations using a vacuum dryer which limited the release of uranium air particulates from the central processing plant. The results of these samples or calculations were presented in the semi-annual reports.

The licensee's environmental monitoring program included air particulate, radon, surface water, private well water monitoring, as well as measurement of ambient gamma exposure rates. The inspectors reviewed the semiannual reports and data submitted after the last inspection and confirmed that the licensee continued to collect the required data and report the results to the NRC.

The inspectors noted that the licensee placed multiple radon track etch detectors at the nearest resident and background sample stations to monitor for the variability in data relative to using only one detector at each location.

Surface water and water supply well samples were collected quarterly from streams, water impoundments, and supply wells within one kilometer of the active wellfield boundary as specified by the license. The licensee collected surface water samples from five locations (unless they were dry) and three impoundments. The inspectors reviewed the analysis and sample frequency of recorded data provided in the semiannual radiological effluent and environmental monitoring reports and found the analytical results of samples for uranium and radium were within the expected background ranges for each well and surface sampling locations in accordance with license condition 11.2.3.

Stream sediment samples were collected annually in accordance with the Soil and Sediment Monitoring Program (CBR-EMP-006) from three locations in Squaw Creek, two locations on English Creek, and three impoundments on English Creek, consistent with the water sampling locations. The samples were analyzed for natural uranium, radium-226, lead-210, and thorium-230 concentrations. No specific limit had been established for sediment samples; the data was used by the licensee for trending purposes.

The licensee calculated the doses to the public based on the results of the effluent and environmental monitoring programs and reported the results to the NRC in the annual radiation protection program review reports as specified in license condition 11.1.2. The inspectors reviewed the public dose assessment for 2023 (ML24162A166); the results for 2024 were not available at the time of the inspection. The results for 2023 at air monitoring station AM9, for example, were approximately 2.6 millirem per year using an

occupancy factor of 0.75 and indoor equilibrium factor of 0.5. This calculated dose was well below the regulatory limit of 100 millirem per year.

The inspectors observed the RSO explain various monitoring instruments/devices that were installed for monitoring radon and particulates at environmental monitoring station AM2, including frequency of sampling, calculation of air volume, and filter-changeout as compared to the instructions provided in procedure CBR-EMP-004, "Air Monitoring," revision 4, and common industry practices. The air sampler station was found to be in good working order, and the station appeared to be well designed and effectively maintained.

b. Wellfield and Excursion Monitoring

License condition 10.1.12 provides instructions for routine monitoring and recording of flow rates of both injection and recovery wells as well as manifold pressures. The inspectors reviewed the licensee's implementation of this license condition. Based on site tours and spot checks of facility records, the inspectors determined that the flow rates were being recorded, and injection pressures did not exceed 100 pounds per square inch at the injection well heads as stipulated in the license.

License condition 11.1.5 specifies the excursion monitoring requirements and the criteria for placing a groundwater monitoring well on excursion status. The inspectors spot-checked facility sampling data and determined that the licensee collected samples at the required frequency and properly identified excursions through the comparison of sampling data to the upper control limits. Additionally, the inspectors spot-checked facility records and found that sampling and testing of excursion monitoring wells was conducted no more than 14 days apart in accordance with license condition 11.1.5. The inspectors' review of excursion facility records confirmed that excursions had not occurred since the previous inspection.

The inspectors observed the licensee's sampling of excursion monitoring well CM6-064. The sampler conducted the sampling using the instructions provided in procedure CBR-EMP-003, "Water Monitoring," revision 9. The inspectors noted that the sampler effectively purged the well and collected sufficient volume of samples for testing. The inspectors concluded that the licensee implemented the excursion monitoring program in accordance with license condition 11.1.5 requirements.

c. Mechanical Integrity Testing

License condition 10.1.4 requires the licensee to implement a well casing mechanical integrity test (MIT) program. The program requires, in part, that the licensee retest each well at least once every five years of use. The inspectors reviewed the licensee's implementation of its well casing MIT program and observed the licensee's staff conducting a MIT.

The inspectors spot-checked MIT facility records and found that the licensee retested each well at least once every five years of use. The inspectors observed the MIT test of well CM2-8. The test was conducted in accordance with procedure CBR-SOP-023, "Mechanical Integrity Test (MIT)," revision 14. The well passed the test using the criteria provided in license condition 10.1.4. The test performer documented the result of the test on a State of Nebraska approved form.

Well casing test failures are reportable to the NRC per license condition 11.1.6. Since the previous NRC inspection, one shallow monitoring well casing failed its MIT and was reporting to the NRC (ML24257A124). The failed test occurred at monitoring well SM7-23 on August 28, 2024. The cause of the test failure was the failure of a well casing in the top 40 feet of the well where the casing sleeve had previously been placed. The licensee replaced the casing sleeve and the well subsequently passed the MIT on August 29, 2024. The test failure will also be reported to the NRC in the next semi-annual radiological effluent and environmental monitoring report, due in early 2025. The inspectors concluded that the MIT failure and subsequent repair of the well casing did not negatively impact either the sampling program or the sample results.

Apart from this reported failed well casing test, no other failed tests have been reported since the previous NRC inspection. The inspectors concluded that the licensee implemented the well casing MIT program in accordance with license condition 11.1.5 requirements.

5.3 Conclusions

The licensee conducted effluent and environmental monitoring and reported the results to the NRC in semi-annual reports in accordance with license requirements. Per the licensee's records, site operations had a negligible effect on public doses. The licensee monitored and recorded well and manifold pressures and flows, and the licensee continued to monitor for wellfield excursions. The licensee continued to implement a well casing MIT program in accordance with license requirements.

6 Emergency Preparedness and Fire Protection at Uranium Recovery and 11e.(2) Byproduct Material Facilities (IP 89050)

6.1 Inspection Scope

To determine if the emergency preparedness and fire protection programs are being maintained in a state of operational readiness. To determine if emergency preparedness and fire protection programs comply with license and regulatory requirements.

6.2 Observations and Findings

a. Emergency Preparedness and Fire Protection

License condition 10.1.2 states, in part, that the licensee shall establish emergency procedures for potential accidents and unusual occurrences. The inspectors confirmed that the licensee maintained an emergency manual and response procedures for emergencies including medical (CBR-EPRP-002), contaminated injury, fire and explosions (CBR-EPRP-003), chemical releases (CBR-EPRP-004), natural disasters (CBR-EPRP-005), security threats (CBR-EPRP-006), radiological releases and spills (CBR-EPRP-007), transportation accidents (CBR-EPRP-008 and -011), evacuations, and reporting requirements (CBR-EPRP-009 and -010).

Fire response instructions included general instructions for fire response, fires in the plant structures, range fires, and gas or electrical supply failures resulting in fires. Radiological emergency response instructions included yellowcake drum failures, and

fires or explosions involving yellowcake material. The procedures also discussed theft of radioactive materials during shipments and thefts of source material above certain weight thresholds as specified in 10 CFR 40.64. The inspectors examined emergency response equipment and found it to be in good condition.

The licensee developed lesson plans for emergency response and fire protection training. The training was provided to all employees as part of annual refresher training. The training included a written test.

b. Response to Spills

License condition 11.1.6 requires the licensee to maintain documentation of unplanned releases of source or byproduct material and process chemicals. In addition, the licensee is required to have written procedures for evaluating the consequences of the spill or event against the NRC's reporting criteria as provide in 10 CFR Parts 20 and 40. The inspectors reviewed the licensee's programs for responding to spills and events. The licensee established procedure CBR-EPRP-007, "Radiological and Spill Emergencies," revision 9, for responding to radiological spills and emergency events. The procedure also referred to two forms used by the licensee to document spills and associated threshold for reporting spills (Spill Notification Analysis Worksheet, CBR-EPRP-FORM-001; and Wellfield Spill Worksheet, CBR-EPRP-FORM-002). The procedure included instructions for collection of soil or spilled water samples, as needed.

Since the last inspection in October-November 2023 (ML23324A176), the licensee experienced and documented six spills. Based on a review of the licensee's documentation, the inspectors confirmed that none of the spills were reportable to the NRC in accordance with the criteria provided in regulations and site procedures.

6.3 Conclusions

The licensee established and implemented programs for emergency responses, fires, and radiological spills. Since the previous inspection, no radiological event or spill occurred that was required to be reported to the NRC.

7 Management Organization and Controls at Uranium Recovery and 11e.(2) Byproduct Material Facilities (IP 89005)

7.1 Inspection Scope

To ensure that the licensee effectively controls, monitors, and quantifies releases of radioactive materials in liquid, gaseous, and particulate forms to the environment. To ensure that effluent control and environmental protection programs comply with license and regulatory requirements.

7.2 Observations and Findings

a. Organizational Structure

At the time of the inspection, the licensee had 18 full time employees at the facility. Since the last inspection, conducted in October-November 2023 (ML23324A176), one additional plant operator was added to the licensee's organization. The highest-ranking

onsite individual was the restoration manager. Other staff included the RSO, operations supervisor, lab foreman, and safety, health, environment, and quality management coordinator. Various technicians were available for plant, wellfield, and chemistry operations. The inspectors determined that the licensee had sufficient staff to implement the radiation protection, groundwater monitoring, and environmental programs at its current operating level.

b. Safety and Environmental Reviews

License condition 9.4 of the performance-based license requires the licensee to establish a Safety and Environmental Review Panel (SERP) process to evaluate whether program changes, tests, or experiments require an NRC license amendment prior to implantation. No new evaluations were completed since the last inspection; therefore, this program area was not reviewed.

c. Annual Program Review

10 CFR 20.1101(c) requires the licensee to periodically (at least annually) review the radiation protection program content and implementation. The inspectors reviewed the licensee's annual audit for calendar year 2023, submitted to the NRC by letter dated June 10, 2024 (ML24162A166). The audit, performed by a member of the health physics organization from the licensee's corporate headquarters, included an evaluation of occupational exposures, radiation survey results, public doses, training and compliance with license and regulatory requirements. The inspectors concluded that the annual program review met the intent of regulatory requirements.

d. Annual Land Use Survey

License condition 11.1.2 requires the licensee to conduct an annual land use survey. The most recent survey was submitted to the NRC by letter dated June 10, 2024 (ML24162A166). The survey concluded that no significant changes were identified. The survey included an arial map of the site and surrounding areas. The inspectors confirmed that the annual land use survey complied with license requirements.

e. Additional Protocols

The inspectors verified that the licensee provided the NRC with appropriate documentation to comply with the requirements of 10 CFR 40.31(g) and 10 CFR 75.11 related to the agreement between the United States of America and the International Atomic Energy Agency for the Application of Safeguards in the United States. The licensee prepared the necessary forms (AP-1, AP-2, AP-7, and AP-8) for calendar year 2023. The forms, dated January 1, 2024, included an annual certification, contact information, production capacity, annual production, and quantity of material on hand. The inspectors reviewed the forms and concluded that the Additional Protocols program was being implemented in accordance with regulatory requirements.

7.3 Conclusions

The licensee's organizational structure was sufficient for the work in progress. Annual program reviews, annual land use surveys and the Additional Protocol requirements were being implemented in accordance with license and regulatory requirements.

8 Exit Meeting Summary

The inspectors presented the inspection findings to the licensee's representatives at the conclusion of the onsite portion of the inspection on September 18, 2024. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary.

SUPPLEMENTAL INSPECTION INFORMATION

Partial List of Persons Contacted

Licensee Personnel

T. Dyer, Radiation Safety Officer
T. Hagman, Restoration Manager
B. Taylor, Plant Foreman
C. Yada, Coordinator, Safety, Health, Environment, and Quality Management

Inspection Procedures Used

IP 89020	Groundwater and Water Management at Uranium Recovery and 11e.(2) Byproduct Material Facilities
IP 89025	Assessment of Dryer and Yellowcake Packaging Operations
IP 89030	Radiation Protection at Uranium Recovery and 11e.(2) Byproduct Material Facilities
IP 89035	Radioactive Waste Management and Transportation at Uranium Recovery and 11e.(2) Byproduct Material Facilities
IP 89045	Effluent Control and Environmental Protection at Uranium Recovery and 11e.(2) Byproduct Material Facilities
IP 89045	Emergency Preparedness and Fire Protection at Uranium Recovery and 11e.(2) Byproduct Material Facilities
IP 89005	Management Organization and Controls at Uranium Recovery and 11e.(2) Byproduct Material Facilities

Items Opened, Closed and Discussed

Opened

None

Closed

040-08943/2023-01-01	VIO	Failure to radiologically survey personal effects
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Discussed

None

List of Acronyms

ADAMS	Agencywide Documents Access and Management System
CEDE	committed effective dose equivalent
CFR	<i>Code of Federal Regulations</i>
gpm	gallons per minute
IP	NRC Inspection Procedure
mrem/hr	millirem per hour
MIT	mechanical integrity test
MU	mine unit
NRC	U.S. Nuclear Regulatory Commission
RSO	radiation safety officer
SERP	Safety and Environmental Review Panel
VIO	violation