



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

March 1, 2013

Ms. Donna L. Wichers, President
Uranium One USA, Inc.
907 North Poplar Street, Suite 260
Casper, Wyoming 82601

SUBJECT: NRC INSPECTION REPORT 040-08502/13-001 AND NOTICE OF VIOLATION

Dear Ms. Wichers:

This refers to the unannounced routine inspection conducted January 29 through January 31, 2013. This inspection was an examination of activities conducted under your license as they relate to safety and 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 preliminary inspection findings were discussed with your staff at the exit briefing conducted at the conclusion of the onsite inspection.

Based on the results of this inspection, the U.S. Nuclear Regulatory Commission (NRC) has determined that one Severity Level IV violation of NRC requirements occurred. The violation is related to the failure to decommission mine units within 24 months and failure to request an alternate decommissioning schedule as required by Title 10 of the *Code of Federal Regulations* CFR 40.42. This violation was evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited because the NRC identified the violations rather than your staff. In addition, the violation is being cited to ensure that you provide us with the corrective actions necessary to prevent recurrence of the violation.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration and convenience, NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is enclosed. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

Based on the results of this inspection, the NRC has also determined that one additional Severity Level IV violation of NRC requirements occurred. This violation involved your failure to suspend operations in the dry/pack area of the plant within one hour when the scrubber differential pressure and scrubber water flow rates were outside specific ranges of operation, as required by License Condition 10.8. This non-repetitive, licensee-identified, and corrected violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the

violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region IV, and the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC's Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Ms. Linda M. Gersey at 817-200-1299 or the undersigned at 817-200-1191.

Sincerely,

/RA/

D. Blair Spitzberg, Ph.D., Chief
Repository and Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Docket: 040-08502

License: SUA-1341

Enclosures:

1. Notice of Violation
2. NRC Inspection Report 040-08502/13-001
3. NRC Information Notice 96-28

cc w/encls: Mr. Carl Anderson, Solid Waste
and Hazardous Division,
Wyoming Department of Environmental Quality
Ms. Nancy Nuttbrock, Land Quality Division
Wyoming Department of Environmental Quality
Mr. Scott W. Ramsay, Radiological Services Supervisor
Wyoming Office of Homeland Security

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See next page

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LMGersey	RCLinton	DBSpitzberg	
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02/28/13	03/01/13	03/01/13	

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Letter to Donna L. Wichers from D. Blair Spitzberg dated March 1, 2013

SUBJECT: NRC INSPECTION REPORT 040-08502/13-001 AND NOTICE OF VIOLATION

DISTRIBUTION w/encls:

Tony Vogel, D:DNMS

Vivian Campbell, DD:DNMS

Eric Freeman, NSIR

David Hanks, NSIR

William VonTill, FSME/DWMEP/DURLD

NOTICE OF VIOLATION

Uranium One USA, Inc.
Johnson and Campbell Counties, Wyoming

Docket: 040-08502
License: SUA-1341

During an U.S. Nuclear Regulatory Commission (NRC) inspection conducted on January 29 through January 31, 2013, one violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR 40.42 (h)(1) requires, in part, that licensees shall complete decommissioning of outdoor areas as soon as practicable but no later than 24 months following the initiation of decommissioning.

10 CFR 40.42 (i) states, in part, that the Commission may approve a request for an alternate schedule for completion of decommissioning of outdoor areas, if the Commission determines that the alternative is warranted.

Contrary to the above, the licensee failed to complete decommissioning of Irigaray Mine Units 8 and 9 within 24 months following the initiation of decommissioning and failed to request an alternate decommissioning schedule. Specifically, the licensee received NRC approval to commence decommissioning of Irigaray Mine Units 8 and 9 on September 20, 2006. In the Annual Report to the Wyoming Department of Environmental Quality, dated August 19, 2008, and copied to the NRC, the licensee stated that they had completed the removal of wellheads at the Irigaray Mine Units 1 through 9 in June 2008. As of the date of inspection, both Mine Units continue to be decommissioned. The licensee has not requested an alternate decommissioning schedule.

This is a Severity Level IV violation (NRC Enforcement Policy Supplement VI, Enforcement Manual Section 8.5).

Pursuant to the provisions of 10 CFR 2.201, Uranium One USA, Inc., is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region IV within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation or, if contested, the basis for disputing the violation or severity level; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid further violations; and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time. If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response 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, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 1st day of March 2013.

U.S. NUCLEAR REGULATORY COMMISSION
Region IV

Docket: 040-08502

License: SUA-1341

Report: 040-08502/13-001

Licensee: Uranium One USA, Inc.

Facility: Irigaray and Christensen Ranch Facilities

Location: Johnson and Campbell Counties, Wyoming

Dates: January 29-31, 2013

Inspector: Linda M. Gersey, Health Physicist
Repository and Spent Fuel Safety Branch

Accompanied By: Ron C. Linton, Hydrogeologist
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental
Management Programs

Anton Vogel, Director
Division of Nuclear Materials Safety

Approved By: D. Blair Spitzberg, PhD, Chief
Repository and Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Attachment: Supplemental Inspection Information

EXECUTIVE SUMMARY

Uranium One USA, Inc.
NRC Inspection Report 040-08502/13-001

This was an announced routine inspection of licensed activities at Uranium One USA, Inc.'s in-situ uranium recovery facilities located in Johnson and Campbell Counties, Wyoming. This inspection included a review of site status, site tours, management organization and controls, site operations, radiation protection, environmental protection, transportation, and radioactive waste management. This report describes the findings of the inspection.

Management Organization and Controls

- The organizational structure and staffing levels maintained by the licensee during the inspection period met the requirements specified in the license and were sufficient for the work in progress. (Section 1.2)
- Audit and program reviews were being conducted in accordance with license and regulatory requirements. (Section 1.2)
- One Unresolved Item was identified related to the licensee approving, through the Safety and Environmental Review Panel (SERP) process, monitoring wells operating outside the NRC licensed boundary. (Section 1.2)
- The licensee had provided the appropriate reports to comply with the additional protocol reporting requirements. (Section 1.2)

In-Situ Leach Facilities

- In general, the licensee was operating the facility as required by the license and regulatory requirements. (Section 2.2)
- One violation was closed related to a failure to perform radiological surveys sufficient to identify existing radiation areas. (Section 2.2)
- One Non-Cited Violation was identified related to failure of the license to suspend dryer operations when the dryer scrubber became disabled, as required by License Condition 10.8. (Section 2.2)

Radiation Protection

- The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. (Section 3.2)
- The doses to employees were below occupational dose limits. (Section 3.2)

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

- The licensee implemented environmental, groundwater, and surface water monitoring programs in accordance with the license. (Section 4.2)

- One violation was closed related to the failure of the licensee to ensure doses in unrestricted areas do not exceed 0.02 milliSieverts (2 millirem) in any one hour. (Section 4.2)

Inspection of Transportation Activities and Radioactive Waste Management

- The licensee was transporting radioactive material in accordance with NRC and DOT requirements. (Section 5.2)
- The licensee was disposing of 11e.(2) byproduct material in accordance with the license and regulatory requirements. (Section 5.2)

Report Details

Site Status

At the time of the inspection, Uranium One USA, Inc. was producing uranium using the in-situ recovery process. The Central Processing Plant (CPP), located at the Irigaray site, receives source material in the form of uranium-loaded resins for further processing, drying, and packaging of uranium concentrate powder (yellowcake). The dryer was operating during the inspection.

The Christensen Ranch Satellite facility was also operating at the time of the inspection. Six new ion exchange vessels had been installed and were in operation to allow for greater water flow in the plant and were in operation. The licensee has requested to increase the flow rate of the facility and the NRC will incorporate the request in the license renewal. The renewal license is expected to be issued in March 2013.

1 Management Organization and Controls (88005)

1.1 Inspection Scope

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

1.2 Observations and Findings

a. Organizational Structure

The licensee's organizational structure is illustrated in Figure 5-2 of the approved license application, updated through the Safety and Environmental Review Panel (SERP) dated February 21, 2012. The inspectors reviewed the licensee's current organizational structure and found that it was in agreement with the structure specified in Figure 5-2. At the time of the inspection, the licensee had 85 full time on-site employees. Two engineers and one lab technician position had been filled since the previous inspection. There were three vacancies including maintenance, electrical, and wellfield utility positions. The licensee's radiation safety staff consisted of one Radiation Safety Officer (RSO), one qualified health physics technician (HPT), and one HPT-in-training. The licensee uses contractors for drilling, construction, and some electrical work, as needed, with approximately 70 contractors monthly on site. The inspectors determined that the licensee had sufficient staff to implement the radiation protection, groundwater monitoring, and environmental programs at its current operating level.

On June 18, 2012, the licensee again evaluated a change in organizational structure in the Safety, Health, and Environment Department (SHE), through the SERP process, recorded as SERP 12-05. The licensee now has the Industrial Safety Technician reporting directly to the Manager Site SHE, when previously that position reported to the Safety Supervisor/RSO. The Safety Supervisor/RSO position responsibilities were changed to focus on radiation protection and less on industrial safety. The Safety Supervisor/RSO position title was changed to RSO. The inspectors reviewed the SERP determination and found SERP 12-05 to be in accordance with the performance-based license.

b. Audits and Inspections

License Condition (LC) 9.6 states, in part, that the RSO will review all operating procedures at least annually, or when a change to a procedure is proposed. The inspectors noted that the RSO had documented the review of updated procedures related to corrective actions taken after the shipment of a pressurized yellowcake drum to a Canadian processor. License Condition 11.4 states, in part, that the RSO or designee shall document a daily walk-through of Irigaray and Christensen Ranch facilities to ensure radiation control practices are being followed. The inspectors noted that the daily and weekly walk-through were conducted by the HPT-in-training, HPT, or RSO. The inspectors found the documentation of the walk-through to comply with the LC.

The annual radiation safety audit for 2011, dated March 30, 2012, was reviewed by the inspectors and found to be a thorough review of the radiation safety program. The audit used NRC Regulatory Guide 8.31 as a basis for audit topics, including reviews of occupational exposures and compliance with regulations and the license application. The licensee stated that the radiation safety audit for 2012 had been performed but the report was not available at the time of the inspection. The inspectors will review this during a future inspection.

c. Safety and Environmental Review Panel

The inspectors reviewed SERP Evaluation Report SERP 12-01A, dated April 11, 2012, related to the review and approve the Northwest and Southeast Area of Mine Unit (MU) 8, Modules 83, 84, 85, 86, & 88 for operations. This SERP incorporated new requirements by the Wyoming Department of Environmental Quality (WDEQ) including a change from Schedule 40 PVC to SDR-17 piping, and a new construction technique for wellhead leak detection. The SERP also approved a new module building design to have a self-contained lined sump. The SERP 12-01A determined in Section 4.0 A., that all but the three wells associated with the perimeter production zone monitor wells (monitor well ring wells) in Southwest Areas of MU 8 are located within the WDEQ Permit Boundary, and NRC licensed area. The SERP determined that a boundary revision from the WDEQ would be needed for operations in the Southwest area of MU 8 (Module 89). The operation of three monitoring wells outside the NRC licensed boundary was identified by the inspectors as an Unresolved Item (URI 040-08502/1301-01). An Unresolved Item involves an issue that requires more information to determine if a violation has occurred. It was unclear at the end of the inspection if the licensee's performance-based license allows the licensee to extend the NRC licensed boundary without a license amendment. This Unresolved Item will be discussed and reviewed by NRC to resolve this item. Should additional information be needed from the licensee, it will be requested in separate correspondence.

The inspectors reviewed SERP Evaluation Report SERP 12-01B, dated October 29, 2012, related to the review and approval the Southwest Area of MU 8, Modules 87 and 89 for operations. SERP 12-01A determined that a WDEQ boundary revision would be needed for the Southwest Area of MU 8, Modules 87 and 89 for operations. The SERP stated that three monitoring wells were installed outside the NRC licensed area and the WDEQ permitted boundary. The WDEQ approved an insignificant boundary revision to incorporate the three well on July 10, 2012. The licensee did not request a revision to the

NRC licensed area, but approved the revision during the SERP. This is tied with the Unresolved Item (URI 040-08502/1301-01) discussed above.

The inspectors reviewed SERP Evaluation Report SERP 12-06, dated June 28, 2012, related to the review and approval to changes in operation resulting from the expansion of the Christensen Ranch Satellite Facility and to allow the startup of the six new IX columns and associated facilities. The inspectors concluded that the licensee had implemented the SERP determination in accordance with the performance-based license conditions.

The inspectors reviewed SERP Evaluation Report SERP 12-08, dated December 27, 2012, related to the review and approval of MU 10A for operations. This SERP evaluated and integrated new WDEQ requirements to use SDR-17 casing materials instead of 40PVC and included new well head designs to include a leak detection system. It also included a module building design to have a self-contained lined sump and a barrier on the outside of the module building adjacent to the module bag filters to ensure radiation levels are less than 0.02 milliSeiverts (2 millirem) in any one hour. Although the SERP states that seven monitoring wells are within the NRC licensed area and within the WDEQ Permitted Boundary, it also states that the licensee needed to revise the WDEQ Permitted Boundary. It was not clear to the inspectors if the operational monitoring wells were actually within the NRC licensed area. This is tied with the Unresolved Item (URI 040-08502/1301-01) discussed above.

The inspectors reviewed SERP Evaluation Report SERP 13-01, dated January 15, 2013, related to the addition of a bi-carbonate injection system to the mine unit modules. This bi-carbonate addition supplements the bi-carbonate supplied at the plant and is used to increase the concentration of bicarbonate of wellfield recovery solution during preconditioning operations. The inspectors concluded that the licensee had implemented the SERP determination in accordance with the performance-based license conditions.

d. Additional Protocol Verification

The inspectors verified that the licensee had provided the NRC with appropriate documentation to comply with 10 CFR 75.11. The licensee had provided the three necessary forms that identified the capacity of yellowcake production, the actual annual yellowcake production, and the quality of yellowcake on hand. The licensee discussed how they determined these numbers, and the inspectors found the reports to be accurate, complete, and consistent for reports submitted from 2010 to 2012.

1.3 Conclusions

The organizational structure and staffing levels maintained by the licensee during the inspection period met the requirements specified in the license and were sufficient for the work in progress. Audit and program reviews were being conducted in accordance with license and regulatory requirements. One Unresolved Item was identified related to the licensee approving, through the SERP process, monitoring wells operating outside the NRC licensed boundary. The licensee had provided the appropriate reports to comply with the additional protocol reporting requirements.

2 In-Situ Leach Facilities (89001)

2.1 Inspection Scope

Determine if in-situ recovery activities were being conducted by the licensee in accordance with the NRC's regulatory requirements and the license.

2.2 Observation and Findings

a. Recovery Operations and Restoration

At the time of this inspection, recovery operations were being performed at the Christensen Ranch Satellite in MU 7, with six Modules, and MU 8, with eight Modules, and MU 10 with two Modules. Mine Unit 5, Module 5-2, had also been put back into production. Five evaporation ponds are located at Christensen Ranch, of which four are being used. The licensee has two deep-disposal wells (DDWs) at the satellite location, although only one is being used at this time. All four evaporation ponds can feed into both DDWs. The operating DDW runs continuously at approximately 50 gallons per minute.

Loaded resin is shipped from the Christensen Ranch Satellite to the Irigaray CPP for processing and drying into yellowcake. The licensee has four evaporation ponds at the Irigaray site. The WDEQ has approved two DDWs for the Irigaray site, although the license has not drilled those yet.

There are five MUs at Christensen Ranch that have been restored. Restoration completion reports for MUs 2, 3, 4, 5, and 6 have been submitted to the NRC and the WDEQ for review. The licensee has gone back into MU 5 for production in one Module. Mine Units 1 through 9, located at the Irigaray site, have been restored and the completion reports have been approved by NRC and WDEQ. Although the restoration has been completed in the wellfield aquifers at Irigaray, the surface and subsurface soils have not been released.

One violation (VIO 040-08502/1301-02) was identified by the inspectors related to the failure to restore Irigaray MUs 8 and 9 within 24 months of initiation of decommissioning and failure to request an alternate restoration schedule. This is a violation of 10 CFR 40.42(h)(1) and 40.42(j). The inspectors noted that authorization to begin decommissioning and restoration approval occurred with NRC letter dated September 20, 2006. Mine Units 8 and 9 still need piping removed and a few wells remain to mark buried piping. No trench or soil surveys have been completed at this time.

The licensee had recently approved, through the SERP process, the addition of sodium carbonate at the module buildings. The operational pH of the lixiviant is around 6.6 - 6.7 during operations. Hydrogen peroxide is currently not in use at CR, although it is permitted by the license. This description of lixiviant make-up is consistent with LC 10.1 and the license application.

The licensee reported current throughput at the Christensen Ranch Satellite is approximately 5,100 gallons per minute (gpm), which currently fluctuates by 100 gpm or so daily. This is consistent with LC 10.5. Throughput is based on an average flow rate of 4,000 gpm annualized over the calendar year. The inspectors noted that the flow rate is

expected to increase to 9,000 gpm on an annual basis when the licensee receives the license renewal, which is anticipated by the end of March 2013. The licensee reported yellowcake production for 2012 was 620,900 pounds (lbs) captured on resin and dried yellow cake was 610,208 lbs. This is consistent with LC 10.5.

The inspectors reviewed all module header house injection manifold pressure weekly charts for 2012 and 2013 and found them to be in compliance with LC 11.1. The licensee reported that each module header house manifold pressure record chart is changed every Sunday night. Flow rates are measured and recorded throughout the day on the chart. Injection pressures did not exceed 140 psi, as per LC 11.1, at the Christensen Ranch site, except for a few isolated spikes in pressure. The highest recorded value was approximately 147 psi in module 82 during the week ending May 28, 2012. This spike was recorded on the chart as a power bump. The current license application Section 3.3.3.4 and Willow Creek procedure WF-4 allow for temporary manifold pressures over 140 psi, but not exceeding 168 psi, for occurrences such as routine maintenance activities such as filter changes, startup or shutdown procedures, etc., or from power surges.

One Non-Cited Violation (NCV 040-08502/1301-03) was discussed with the licensee related to failure to suspend dryer and packaging operations when the scrubber control system exceeded specified criteria, as required by LC 10.8. On December 9, 2012, low water flow to the yellowcake dryer scrubber caused the differential pressure to drop below the minimum acceptable range of 37 inches of water to 33 inches of water for approximately 4 hours and disabled the scrubber system during that time. The cause of the low water flow was due to operators draining water from the scrubber settling tank simultaneously with filling the resin transfer tank with the plant supply water. This caused the scrubber system to be starved of water, causing the scrubber system to go out of designated ranges. The licensee found during its investigation that the audible alarm system that would have indicated that the scrubber system was disabled had been inadvertently unplugged. The licensee performed surveys near the yellowcake dryer stack, reviewed plant air monitoring data and environmental site data to ensure there was no release of yellowcake while the scrubber system was disabled. The licensee found no contamination or high readings on the plant air monitoring or environmental samples. The licensee implemented corrective actions by updating the procedure for draining the scrubber settling tank to ensure the plant water supply is not being used elsewhere and trained all operators on the changes. Also, a lock has been placed on the cabinet with the audible alarm to prevent future disabling. Although this incident was a violation of LC 10.8, the licensee identified the violation, immediately corrected it, and the corrective actions should prevent future recurrence. This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the NRC Enforcement Policy.

b. Site Tours

The inspectors conducted site tours to observe in-situ recovery operations in progress. Areas toured included the Irigaray CPP and associated evaporation ponds, MU 4 and associated Modules, MU 5, the Christensen Ranch satellite and associated evaporation ponds, and MUs 7 through 10 and associated modules. The inspectors noted that radiation protection postings were located as appropriate and in accordance with LC 9.11. Plant parameters were within required operating intervals and plant equipment

appeared to be in good condition. In summary, the licensee was maintaining control of the areas and equipment in accordance with license and regulatory requirements.

The licensee has recently installed three additional security cameras located in the yellowcake drum storage area, the entry into the lower level of the drypack area, and outside the CPP viewing the yellowcake transport trailer. The cameras can be viewed on a dedicated monitor in the CPP control room. The licensee has constant presence on site with a minimum of one plant operator physically in the plant and two wellfield operators on staff at all times. All entry doors to the Satellite, CPP, and Module buildings have key coded locks or padlocks. The inspectors noted that the areas around the evaporation ponds are fenced and entries have a pad lock.

The inspectors conducted independent radiological surveys of the gamma exposure rates present in the plant. The surveys were conducted using a Ludlum Model 19 microRoentgen survey meter calibrated with Radium-226 (NRC 015540, calibration due date of 05/14/2013), and a Ludlum Model 2401-EC survey meter (NRC 21176G, calibration due date of 12/28/2013). The inspectors noted that the lunchroom in the CPP had a higher background than previous inspections. Previously, the lunchroom was approximately 25 microRoentgen per hour ($\mu\text{R/hr}$), which is the approximate background radiation levels. During the inspection, the lunchroom was found to be 125 $\mu\text{R/hr}$. The increase in radiation readings was due to the storage of yellowcake drums inside the CPP adjacent to the lunchroom. Once the yellowcake drums are shipped off site, the readings in the lunchroom should return to normal background readings.

During the previous inspection, one violation (VIO 040-08502/1201-01) of 10 CFR 20.1501(a)(2)(i) was identified related to failure to perform radiological surveys to evaluate the magnitude and extent of radiation levels. The inspectors determined that the radiation level near the Precipitation Tank Number 3, located in the CPP, was 0.05 milliSeiverts per hour (5 millirem per hour) at 30 centimeters from the tank surface, making it a radiation area as defined by 10 CFR 20.1003. The tank had not been surveyed to reflect current conditions and was not posted as a radiation area. Additionally, the inspectors determined that the radiation level at 30 centimeters from a filter bag in the Module 8-1 was 0.8 milliSeiverts per hour (8 millirems per hour), making it a radiation area as defined by 10 CFR 20.1003. The licensee responded to the violation in a letter dated July 20, 2012. The licensee took corrective actions by posting the Precipitation Tank Number 3 as a Radiation Area and increasing the frequency of gamma surveys to weekly through July 2012. Due to the transient nature of the gamma readings, the Precipitation Tank Number 3 will remain posted as a Radiation Area. The licensee also increased the frequency of gamma surveys in the Module 8-1 to weekly through July 2012 and posted the entrance as a Radiation Area. The licensee will continue to perform monthly gamma surveys in the CPP and Module buildings and if a new Radiation Area is identified, the gamma surveys will be increased to weekly until the area is no longer a Radiation Area. The inspectors reviewed the corrective actions and found them to be adequate to prevent recurrence. This violation is closed.

2.3 Conclusions

In general, the licensee was operating the facility as required by the license and regulatory requirements. One violation was closed related to a failure to perform radiological surveys sufficient to identify existing radiation areas. One Non-Cited

Violation was identified related to failure of the license to suspend dryer operations when the dryer scrubber became disabled, as required by License Condition 10.8.

3 Radiation Protection (83822)

3.1 Inspection Scope

Determine whether the licensee's radiation protection program was being conducted in compliance with license and 10 CFR Part 20 requirements.

3.2 Observations and Findings

a. Occupational Exposures

The inspectors reviewed the licensee's dose assessment records for calendar year (CY) 2012. Approximately 25 employees were monitored for external exposures using thermoluminescent dosimeters that were exchanged on a quarterly basis. Occupationally monitored employees included CPP operators, satellite operators, wellfield operators, two plant supervisors, two wellfield utility employees and the laboratory personnel. The highest deep dose equivalent for CY 2012 was 2.4 milliSieverts (240 millirems), received by a plant operator.

The licensee conducted air sampling, in part, for assessment of internal exposures, as required by LC 10.10. The inspectors reviewed the licensee's radon-222 air sampling records and the uranium particulate and worker breathing zone sample results for CY 2011. The highest derived airborne concentration in hours (DAC-hrs) for radon daughters for an employee for the time reviewed was 69.18 DAC-hrs. The highest employee airborne uranium exposure was 17.57 DAC-hrs. The results are below the limit of 2000 DAC-hrs per year. The inspectors confirmed that the licensee had conducted sampling at the required intervals, and the sample results were included in the worker's total effective dose equivalent exposure records.

The licensee collected urine bioassay samples to assess the potential for intakes of uranium. The inspectors reviewed the bioassay program to verify compliance with LC 10.2. The inspectors confirmed that bioassay samples were taken at the required frequency and in accordance with the collection procedure. Since the previous inspection, no bioassay sample result exceeded the action level of 15 micrograms of uranium per liter of urine ($\mu\text{g/l}$).

The licensee also monitors for soluble uranium intake in compliance with 10 CFR 20.1201(e). The highest soluble intake of uranium for CY 2012 was calculated to be 1.87 milligrams of uranium. This is below the regulatory limit of 10 milligrams.

The inspectors noted that the highest total effective dose equivalent (the summation of internal and external radiation exposure) for CY 2012 was 4.10 milliSieverts (410 millirem). This is below the annual limit of 50 milliSieverts (5000 millirem).

b. Radiation Protection Surveys

Section 5.7.6 of the license application requires, in part, that the licensee perform quarterly gamma radiation surveys in specific locations throughout the satellite buildings

and CPP areas to verify radiation area postings and to assess external radiation conditions. At the time of the inspection, the inspectors determined that the licensee was conducting the gamma radiation surveys more frequently in most areas. The inspectors reviewed the survey results performed and found them to meet the requirements of the license.

Alpha contamination surveys were conducted by the licensee on a weekly frequency in clean areas of the site and monthly in process areas. The inspectors reviewed the survey results and found them to meet the requirements of the license.

c. Instrumentation

The inspectors reviewed the licensee's operability, calibration, and maintenance records for portable radiation survey instruments. On an annual basis, the licensee sends all portable survey instruments to an outside vendor for calibration. The inspectors reviewed instrument calibration certificates for several portable survey instruments and found the calibration certificates to be adequate and the instruments currently calibrated. The inspectors observed survey meters being used by the licensee's employees when exiting restricted areas. The inspectors also verified radiation survey meters were being operationally checked with a radiation source each day, as required by LC 10.13. The survey instruments examined by the inspectors were found to be in calibration and were being used appropriately by the licensee's staff.

3.3 Conclusions

The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. The doses to employees are below occupational dose limits.

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

4.1 Inspection Scope

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

4.2 Observations and Findings

a. Environmental Monitoring

License Conditions 12.1 and 12.6 state, in part, that the results of effluent and environmental monitoring shall be reported to the NRC in accordance with the provisions of 10 CFR 40.65. The inspectors reviewed the licensee's Semiannual Effluent and Environmental Monitoring Report for January 1 through June 30, 2012, dated October 3, 2012. The licensee's environmental monitoring program consisted of air particulate, radon, ambient gamma radiation, dryer stack emissions, groundwater, and surface water. Soil and vegetation sampling are conducted annually for trending purposes only.

Continuous air particulate sampling was conducted at six locations at the Irigaray CPP. The licensee sampled the air for uranium, radium-226, thorium-230, and lead-210 particulate concentrations. None of the sample results for the monitoring period exceeded the respective effluent concentration limits specified in 10 CFR Part 20, Appendix B.

The licensee also sampled for radon-222 concentrations in the air at six locations at the Irigaray CPP and five locations at the Christensen Ranch facility. The inspectors reviewed the radon-222 airborne concentration results for the monitoring period and found that all sample results taken by the licensee were less than the effluent concentration approved in the license application.

The licensee measured ambient gamma radiation levels at six sample stations at the Irigaray facility and five sample locations at the Christensen Ranch facility using thermoluminescent dosimeters. For the monitoring period, all sample results were comparable to background level.

The licensee resumed operation of the yellowcake dryer at the Irigaray CPP on November 1, 2011. A dryer stack emission test was completed by a contractor on April 30, 2012. The test showed a particulate emissions rate of 0.038 pounds per hour of total particulates, including yellowcake (U_3O_8), natural uranium, thorium-230, radim-266, and lead-210. All the particulate concentrations released for the year were below the effluent concentration limit specified in 10 CFR Part 20, Appendix B.

During the previous inspection, one violation (VIO 040-08502/1201-02), was identified by the inspectors related to exceedence of doses in unrestricted areas. The inspectors determined that the dose in an unrestricted area, adjacent to Module 8-1, was 0.03 milliSieverts (3 millirems) per hour. Additionally, the inspectors determined that the dose in an unrestricted area adjacent to a locked and secured closed truck bed trailer, being used as storage for full yellowcake product drums, was 0.03 milliSieverts (3 millirems) per hour. This is a violation of 20.1301(a)(2), which states, in part, that the dose in any unrestricted area from external sources does not exceed 0.02 milliSieverts (2 millirem) in any one hour. The licensee responded to the violation in letter dated July 20, 2012. The corrective actions taken by the licensee included installing fencing adjacent to all Module buildings which are using bag filters and to install a removable fence surrounding the yellowcake trailer. Weekly gamma readings are taken at the fenced areas near the Module buildings and near the trailer used to store full yellowcake product drums to ensure the gamma readings remain below 0.02 milliSieverts (2 millirem) in any one hour. The inspectors reviewed the corrective actions and found them adequate to prevent recurrence. This violation is closed.

b. Groundwater and Surface Water Environmental Monitoring

The groundwater monitoring program consists of quarterly sampling of five ranch wells near the Christensen Ranch facility and one ranch well near the Irigaray facility. Each sample is analyzed for natural uranium, thorium-230, radium-226, lead-210, and polonium-210. All radionuclides were at very low concentrations or non-detectable. No significant trends in the data was noted during this monitoring period. Samples were consistent with LC 11.3.

Surface water monitoring consists of Willow Creek, which is sampled quarterly, and the Powder River, which is sampled annually. All samples are analyzed for natural uranium, thorium-230, radium-226, lead-210, polonium-210, and eight chemical constituents, when there is water available. During the monitoring period, only one sampling was conducted at Willow Creek due to the creek being dry or frozen during the other sampling periods. All radionuclide results for the first and second quarters of 2012 were low or non-detectable and no results exceed the effluent limits in 10 CFR 20, Appendix B.

c. Wellfield and Excursion Monitoring

License Condition 12.2 requires, in part, that the licensee maintain documentation on spills of source materials, 11e.(2) byproduct materials, or process chemicals. The licensee is also required to report to the NRC any wellfield excursions, spills, or pond leaks involving source materials, 11e.(2) byproduct materials, or process chemicals that may have an impact on the environment, or that is required to be reported to a State or Federal Agency. Within 30 days of notification to the NRC, the licensee is required to submit a written report that details the conditions leading to the spill or incident, corrective actions taken, and the results achieved.

The licensee reported that ten spills had taken place since April 2012. The inspectors reviewed a representative sample of spill reports. Notification was made to the NRC regional office and NRC Headquarters. These notifications and follow-up reports appear to be consistent with the reporting procedures required in LC 12.2. The inspectors toured MU 8 to look at leak 8-4/5 that was identified after the MU 8 was put into service. The leak was determined to be from improperly plugged historic boreholes and the licensee discussed actions taken to stop the leak which the inspectors found to be adequate.

4.3 Conclusions

The licensee implemented environmental, groundwater, and surface water monitoring programs in accordance with the license. One violation was closed related to the failure of the licensee to ensure doses in unrestricted areas do not exceed 0.02 milliSieverts (2 millirem) in any one hour.

5 Inspection of Transportation of Activities and Radioactive Waste Management (86740 and 88035)

5.1 Inspection Scope

Determine if transportation and disposal activities conducted by the licensee were conducted in compliance with regulatory requirements.

5.2 Observations and Findings

a. Inspection of Transportation Activities

Trucks with tanker trailers are routinely utilized by the licensee to transport resin to and from the Christensen Ranch satellite building and the CPP. The inspectors reviewed selected resin tanker trailer shipping papers and found them to include the pertinent

information required by Department of Transportation (DOT) regulations. The inspectors observed a plant operator preparing a resin truck for transport including performing radiation surveys and found all actions to be in compliance with the license and regulatory requirements.

Between April 20 and June 15, 2012, 9 yellowcake drum shipments had been transported to a processor. The licensee has not shipped any yellowcake drums since the Confirmatory Action Letter, related to the shipment of a pressurized drum, was closed on December 5, 2012. The licensee was awaiting confirmation from the processor that shipments could resume. During the inspection, the licensee stated they had received confirmation from the processor that shipments could resume and the first shipment of yellowcake drums was scheduled for February 12, 2012. Over 700 full yellowcake barrels were in storage. The inspectors reviewed and discussed the updated procedure for preparing yellowcake drums for shipment, specifically how the licensee would ensure any pressurized drums would be identified. The inspectors found the procedure to be adequate to detect pressurized drums and will further observe the licensee's preparations of yellowcake drums for transport during a future inspection.

b. Solid Radioactive Waste

License Condition 9.7 requires, in part, that the licensee possess a waste disposal agreement to dispose of 11e.(2) byproduct material at an offsite location. The inspectors reviewed the waste disposal agreement and determined that it was valid until July 23, 2015. From March 22, 2012, through January 2013, a total of twelve waste disposal shipments were made to a licensed waste disposal site. Material sent for disposal consisted of 11e.(2) contaminated equipment, such as filters, pipes, and pumps. The inspectors reviewed selected shipping records and found them to be complete.

c. Review of Wastewater Treatment Activities

License Conditions 10.6 and 10.7 state, in part, that the licensee may dispose of liquid effluents by discharge into evaporation ponds or by permitted Deep Disposal Wells. The inspectors reviewed the reserve capacity available in the overall pond system to accept the contents of one of the ponds in case of leakage. The inspectors concluded that the licensee was maintaining sufficient reserve capacity in the ponds.

The inspectors accompanied the licensee on inspection of evaporation ponds CR 1 through 4 at Christensen Ranch. The licensee demonstrated weekly and quarterly pond leak detection and showed where these items are listed and recorded on Waste Pond Inspection sheet. At pond CR-3, the licensee demonstrated at one of the six pond leak detection pipes the process for a quarterly leak-detection inspection as required by internal procedures. The freeboard was inspected on all four ponds and none exceeded the freeboard requirements in LC 10.5. The evaporation pond inspections appear to be consistent with LC 11.4.

5.3 Conclusions

The licensee was transporting radioactive material in accordance with NRC and DOT requirements. The licensee was disposing of 11e.(2) byproduct material in accordance with the license and regulatory requirements.

6 Exit Meeting Summary

The inspectors presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on January 31, 2013. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary that was included in the report.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Larry Arbogast, Radiation Safety Officer
Barry Koch, Mine Manager
Bart Serres, Irigaray Supervisor
Tim McCullough, Manager Site Safety Health Environment

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

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

040-08502/1301-01	URI	Approval through the SERP process of monitoring wells operating outside the NRC licensed boundary
040-08502/1301-02	VIO	Failure to decommission wellfields within 24 months as required by 10 CFR 40.42
040-08502/1301-03	NCV	Failure to suspend dryer and packaging operations when the scrubber control system exceeded specified criteria, as required by LC 10.8.

Closed

040-08502/1201-01	VIO	Failure to perform surveys as required by 10 CFR 20.1501(a)(2)(i).
040-08502/1201-02	VIO	Failure to keep unrestricted areas less than 0.02 milliSieverts (2 millirem) in any one hour.
040-08502/1301-03	NCV	Failure to suspend dryer and packaging operations when the scrubber control system exceeded specified criteria, as required by LC 10.8.

Discussed

none

LIST OF ACRONYMS USED

CFR	<i>Code of Federal Regulations</i>
CPP	Central Processing Plant
CY	Calendar Year
DAC-hrs	derived airborne concentration in hours
DDW	Deep Disposal Well
DOT	U.S. Department of Transportation
HPT	health physics technician
IP	Inspection Procedure
LC	License Condition
MU	Mine Unit
NCV	Non-Cited Violation
NOV	Notice of Violation
NRC	U.S. Nuclear Regulatory Commission
SERP	Safety and Environmental Review Panel
SHE	Safety Health and Environment
RSO	Radiation Safety Officer
RO	Reverse Osmosis
µg/l	microgram per liter
VIO	violation
WDEQ	Wyoming Department of Environmental Quality