



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

June 20, 2012

Donna L. Wichers
Senior Vice President, ISR Operations
Uranium One USA, Inc.
907 North Poplar Street, Suite 260
Casper, Wyoming 82601

SUBJECT: NRC INSPECTION REPORT 040-08502/12-001 AND NOTICE OF VIOLATION

Dear Ms. Wichers:

This refers to the announced routine inspection conducted April 16 through April 18, 2012. 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 you at the exit briefing conducted at the conclusion of the onsite inspection. After further discussions with you telephonically regarding an elevated bioassay result, the final exit briefing was conducted with you telephonically on June 20, 2012.

Based on the results of this inspection, the NRC has determined that two Severity Level IV violations of NRC requirements occurred. The violations are related to a) your failure to perform surveys, as required by 10 CFR 20.1501(a)(2)(i) and b) your failure to ensure that the dose in any unrestricted area does not exceed 0.02 milliseiverts (2 millirem) in any one hour, as required by 10 CFR 20.1301(a)(2). These violations were 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 violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report. The violations are being cited because the NRC identified the violations rather than your staff. In addition, the violations are being cited to ensure that you provide us with the corrective actions necessary to prevent recurrence of the violations.

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 perform and document weekly visual inspections of the Irigaray and Christensen Ranch evaporation ponds, as required by License Condition 11.4. 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 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, PhD, 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 040-08502/12-001
3. NRC Information Notice 96-28

cc w/enclosure:

Mr. Carl Anderson, Administrator
Wyoming Department of Environmental Quality
Solid and Hazardous Waste Division
122 West 25th Street
Cheyenne, Wyoming 82002

Ms. Nancy Nuttbrock, Administrator
Wyoming Department of Environmental Quality
Land Quality Division
1866 South Sheridan Ave.
Sheridan, Wyoming 82801
Wyoming Radiation Control Program Director

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NOTICE OF VIOLATION

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

Docket: 040-08502
License: SUA-1341

During an NRC inspection conducted on April 16 through April 18, 2012, two violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- 1) 10 CFR 20.1501(a)(2)(i) states, in part, that the licensee shall make or cause to be made, surveys that are reasonable under the circumstances to evaluate the magnitude and extent of radiation levels.

Contrary to the above, on April 16, 2012, the licensee failed to survey Precipitation Tank Number 3 in the Central Processing Plant, to evaluate the magnitude and extent of radiation levels. On this date, the inspector determined that the radiation level near the Precipitation Tank Number 3 was 0.05 milliSieverts 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.

Additionally, contrary to the above, on April 16, 2012, the licensee failed to perform surveys in Module 8-1 to evaluate the magnitude and extent of radiation levels. Specifically, the inspector determined that the radiation level at 30 centimeters from a filter bag in Module 8-1 was 0.8 milliSieverts per hour (8 millirems per hour), making it a radiation area as defined by 10 CFR 20.1003.

This is a Severity Level IV violation (Section 6.3(d)).

- 2) 10 CFR 20.1301(a)(2) states, in part, that each licensee shall conduct operations so that the dose in any unrestricted area from external sources does not exceed 0.02 milliSieverts (2 millirems) in any one hour.

Contrary to the above, on April 16, 2012, the licensee failed to maintain doses in an unrestricted area less than 0.02 milliSieverts (2 millirems) in any one hour. Specifically, the inspector determined that the dose in an unrestricted area, adjacent to Module 8-1, was 0.03 milliSieverts (3 millirems) per hour. Additionally, the inspector determined that the dose in an unrestricted area adjacent to an enclosed truck bed trailer, being used as storage for full yellowcake drums, was 0.03 milliSieverts (3 millirems) per hour.

This is a Severity Level IV violation (Section 6.7(d)).

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 20th day of June, 2012

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

Docket: 040-08502

License: SUA-1341

Report: 2012-001

Licensee: Uranium One USA, Inc.

Facility: Irigaray and Christensen Ranch Facilities

Location: Johnson and Campbell Counties, Wyoming

Dates: April 16-18, 2012

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

Accompanied By: Ron 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

Haimanot Yilma, Project Manager
Environmental Protection and Performance Assessment
Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental
Management Programs

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

Attachment: Supplemental Inspection Information

EXECUTIVE SUMMARY

Uranium One USA, Inc.
NRC Inspection Report 040-08502/12-001

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).
- The licensee completed the safety and environmental review panel evaluations in accordance with license requirements (Section 1.2).

In-Situ Leach Facilities

- With one exception, identified in this report, the licensee was conducting plant site operations in accordance with license and regulatory requirements (Section 2.2).
- One violation was identified related to a failure to perform radiological surveys sufficient to identify existing radiation areas (Section 2.2).

Radiation Protection

- The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license, with one exception discussed in Section 2.2 (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, with one exception (Section 4.2).
- One violation was identified 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).

- One Non-cited Violation was identified related to the failure to perform evaporation pond inspections (Section 5.2).

Report Details

Site Status

At the time of the inspection, Uranium One USA, Inc. was mining 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 had operated from October 2011 through January 2012, but was not operating during the inspection. The licensee stated that they were building up the supply of yellowcake slurry before commencing with another dryer run. While the dryer is not operating, the licensee is performing maintenance on dryer components. Since the previous inspection, the licensee had installed a back-up pump for the resin water transfer tank.

The Christensen Ranch Satellite facility was operating at the time of the inspection. Six new ion exchange vessels had been installed to allow for greater water flow in the plant. The licensee has requested to increase the flow rate of the facility in an amendment request to the license and is waiting for NRC approval.

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 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 83 full time on-site employees. The licensee's radiation safety staff consisted of one Radiation Safety Officer (RSO), one qualified health physics technician (HPT), and one HPT-in-training. A new Mine Manager began employment in February 2012. The licensee uses contractors for drilling work and as needed. 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 July 19, 2011, the licensee evaluated a change in organizational structure in the Safety, Health, and Environment Department (SHE), through the Safety and Environmental Review Panel (SERP) process, recorded as SERP 11-05. The licensee added a new position of Site Manager of SHE and changed the Environmental Technician position to Environmental Specialist. The RSO previously reported to the Operations Manager, but now reports to the Site Manager of SHE. All environmental duties were removed from the RSO responsibilities and are now performed by the Environmental Specialist. The HPT-in-training and the industrial safety technician continue to report to the RSO. The inspectors reviewed the SERP determination and found SERP 11-05 to be in accordance with the performance-based license. The

inspectors evaluated a second SERP for an organizational change dated February 21, 2012. The licensee, under SERP 12-02, separated the wellfield construction staff from the operator staff. The Director of Operations position was eliminated and replaced by the Director of Wellfield Development, who reports directly to the Senior Vice President Americas for Uranium One. The Mine Manager continues to be the highest level of site management who now reports to the Senior Vice President Americas for Uranium One. The inspectors concluded that the SERP determination was 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 annual reviews of all operating procedures for 2011 and 2012. 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-throughs were conducted by the HPT-in-training, HPT, or RSO. The inspectors found the documentation of the walk-throughs to comply with the LC.

The annual radiation safety audit for 2010, dated February 9, 2011, was reviewed by the inspectors and found to be a thorough review of the radiation safety program. The audit included reviews of occupational exposures and compliance with regulations and the license application. The licensee stated that the radiation safety audit for 2011 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 12-01, dated January 27, 2012, related to the approval of operations of the northeast area of MU 8, Modules 8-1 and 8-2. The inspectors concluded that the licensee had implemented the SERP determination in accordance with the performance-based license conditions.

The inspectors reviewed SERP 11-04, dated May 20, 2011, related to adding a fan to the existing ventilation ducting system for the resin transfer water storage tank at the Irigaray CPP. The addition of the fan to the ventilation system would aid in removing radon from the area and vent radon to the outside atmosphere during resin transfers. The inspectors concluded that the licensee had implemented the SERP determination in accordance with the performance-based license conditions.

The inspectors reviewed SERP 11-03, dated May 20, 2011, related to the addition of a bi-carbonate injection system to the mine unit modules. This bi-carbonate supplements the bi-carbonate supplied at the plant and is used to increase the concentration of bi-carbonate of wellfield recovery solution during preconditioning operations. SERP 11-02, dated March 4, 2011, related to the addition of three air sampling locations at the Irigaray CPP, was reviewed by the inspectors. The three new locations were implemented as a result of the airflow study performed in December 2010 and will allow for better representation of air particulate concentrations during operations. SERP 11-01, dated March 2, 2011, related to installation of a new vent system for the process

reverse-osmosis (RO) Unit 4, located in the satellite facility, was also reviewed by the inspectors. The addition of the vent line prevents buildup of air or gases in the pump line. The inspectors concluded that the licensee had implemented the SERP determinations in accordance with the performance-based license conditions.

1.3 Conclusions

The organizational structure and staffing levels maintained by the licensee during the inspection period met the requirements specified in the license and were sufficient for the work in progress. The licensee completed the SERP evaluations in accordance with license 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 Mine Unit (MU) -7, with six Modules, and MU-8, with two Modules. Mine Unit 5, Module 5-2, had also been put back into production. Mine Unit 8, Module 8-3, was next to become operational. 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.

There are five wellfields at Christensen Ranch that have been restored. Restoration completion reports for Mine Units 2, 3, 4, 5, and 6 have been submitted to the NRC and the Wyoming Department of Environmental Quality (WDEQ) for review and approval. 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, the surface and subsurface soils have not been released.

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, although only one pond is in service. The WDEQ has approved two DDWs for the Irigaray site, although the license has not drilled those yet.

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, Christensen Ranch satellite and associated evaporation ponds, and MUs 7 and 8 and associated modules. The inspectors reviewed the status of plant equipment, radiation protection

postings and site security. Plant parameters were within required operating intervals, plant equipment appeared to be in good condition, and site security was adequate. In summary, the licensee was maintaining control of the areas and equipment in accordance with license and regulatory requirements.

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 (NRC 015540, calibration due date of 04/27/2012), and a Ludlum Model 2401-EC survey meter (NRC 21176G, calibration due date of 01/10/2013). The inspectors did not identify any areas that had not already been identified and posted as radiation areas by the licensee, with the exceptions discussed below.

During the site tours, one violation (VIO 040-08502/1201-01) 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 had stated that they had not performed any radiation surveys in the Module. During the inspection, the licensee surveyed the Module using licensee instruments and their results were in agreement with those of the inspectors. This is a violation of 10 CFR 20.1501(a)(2)(i).

2.3 Conclusions

With one exception, identified in this report, the licensee was conducting plant site operations in accordance with license and regulatory requirements. One violation was identified related to a failure to perform radiological surveys sufficient to identify existing radiation areas.

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) 2011. Approximately 37 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 2011 was 0.78

milliSieverts (78 millirems).

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 172.9 DAC-hrs. The highest employee airborne uranium exposure was 10.48 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. During FY 2011, only one bioassay sample result exceeded the action level of 15 micrograms of uranium per liter of urine ($\mu\text{g/l}$). On August 1, 2011, an employee's urine bioassay result was reported by the analytical laboratory as 16.4 $\mu\text{g/l}$. The employee had provided the bioassay sample July 28, 2011. In accordance with license requirements, the licensee had the laboratory re-run the sample and the results were 21.7 $\mu\text{g/l}$. A follow up bioassay was collected from the employee on August 2, 2011, and the results were non-detectable. The licensee performed an investigation and determined that an Irigaray plant operator, who was working under a Radiation Safety Permit (RWP) on July 25, 2011, had failed to wear a respirator while putting tools and other welding equipment into the dryer enclosure to set up for a welding job. The RWP specified that the operator wear a respirator with a welding hood, breathing zone lapel air sampler, and protective clothing. When questioned, the operator stated that he thought the respirator was only required to be worn during the welding and not for set up because the RWPs directions included a welding hood. The employee stated he was in the dryer enclosure without a respirator no more than 10 minutes. The licensee assigned an additional dose of 0.028 milliSieverts (2.8 millirem) to the operator based on his lapel air sampling results without a respiratory protection factor for 10 minutes. As corrective action, the licensee provided additional training to the worker involved on requirements of RWPs. In addition, the licensee stated that for future RWPs, they would ensure it was clearly identified when respirators are required for entry into a given work area. The inspectors reviewed the investigation documentation and agreed with the licensee's dose assessment.

The licensee also monitors for soluble uranium intake in compliance with 10 CFR 20.1201(e). The highest soluble intake of uranium for CY 2011 was calculated to be 0.16 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 2011 was 2 milliSieverts (200 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, except the Modules. The Modules had not been surveyed (see Section 2.2a.) 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, with one exception discussed in Section 2.2. 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 July 1 through December 31, 2011, dated February 28, 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 limit specified in 10 CFR Part 20, Appendix B.

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 November 21, 2011. The test showed a particulate emissions rate of 0.041 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.

The licensee used the results of the particulate monitoring, radon-22, and gamma radiation levels to determine compliance with the dose limit for individual members of the public, as required by 20.1301(a)(1). The licensee determined that the highest exposed individuals were the employees staying at the on-site man camps during off shift hours. The licensee determined that the personnel staying in the Irigaray man-camp received a dose of 0.23 milliSieverts (23 millirem) for CY 2011. The inspectors determined the doses were below the 0.1 milliSieverts (100 millirem) annual dose limit to members of the public.

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 inspector 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 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.

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.

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 one data set 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 three spills had taken place during CY 2011. The first spill occurred on August 3-4, 2011, with approximately 7,000 to 10,000 gallons of 20% sodium chloride solution spilled while filling the brine generator tank at the Irigaray CPP. A written report was provided to the NRC dated August 31, 2011. Clean up included removal of approximately one cubic yard of topsoil, based on visible evidence of impact. The inspectors reviewed the corrective actions and found them to be adequate.

On September 23, 2011, approximately 4,000 gallons of injection fluid was released as a result of an injection booster pump failure at the Module 7-5 in Mine Unit 7. Over 2,000 gallons were contained inside the building and removed with a vacuum truck and 2,000 gallons were released through the roof injection pump hatch and onto the adjacent ground to the east of the building. A written report was provided to the NRC dated September 27, 2011. The inspectors reviewed the written report and found the corrective actions were adequate.

On December 14, 2011, approximately 1,500 gallons of RO brine fluid was released from a broken 6-inch steel spool piece between a valve and the supply line that runs from the Satellite Plant to the Evaporation Pond. Approximately 500 gallons were contained inside Manhole #2 and 1,000 gallons were released over the top of the manhole and flowed about 200 ft inside of the enclosed Evaporation Pond Area. This area is entirely within the fenced Restricted Area. A written report was provided to the NRC dated December 16, 2011. The inspectors reviewed the written report and found the corrective actions were adequate.

License Condition 11.2 requires, in part, that the licensee monitor groundwater at the designated monitoring wells twice a month and any confirmed wells that exceed two constituent upper control limits shall be reported to the NRC. At the time of the inspection, three wells were on excursion status: Monitor Wells 7MW-32, 2MW-89, and 5MW-66. The inspectors reviewed the quarterly progress report for excursion wells dated April 4, 2012, and concluded the corrective actions were being taken as required by the license.

4.3 Conclusions

The licensee implemented environmental, groundwater, and surface water monitoring programs in accordance with the license, with one exception. One violation was identified 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.

At the time of the inspection, no yellowcake drums had been shipped off site. Several hundred full yellowcake barrels were in storage with shipment imminent. Review of the licensee's transportation of yellowcake drums will be performed 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 January 25, 2013. From January 2011 through January 2012, a total of eight 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 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 DDWs. 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.

During the inspection, the licensee discussed a self-identified violation with the inspectors. On March 12, 2012, the licensee discovered that the weekly pond inspections for the Christensen Ranch site were not performed for the weeks of February 4, 2012, February 12, 2012, February 19, 2012, and at the Irigaray site the

week of March 4, 2012. The licensee stated that the environmental samplers did not have a sufficient reason for missing these inspections. This is a violation (NCV 040-08502/1201-03) of LC11.4, which requires, in part, that the licensee perform and document weekly visual inspections of the Irigaray and Christensen Ranch Satellite evaporation pond embankments, fences, and liners, as well as measurements of pond freeboard and checks of the leak detection system. However, 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. The licensee's corrective actions included generating a compliance schedule for all environmental compliance duties that the new Site SHE Manager maintains and holding weekly meeting to discuss work that needs to be completed. The inspectors reviewed the corrective actions and found them to be adequate.

5.3 Conclusions

The licensee was transporting radioactive material in accordance with NRC and DOT requirements. One Non-Cited Violation was identified related to the failure to perform evaporation pond inspections.

6 Exit Meeting Summary

The NRC inspectors presented the preliminary inspection results to the licensee's representatives at the conclusion of the onsite inspection on April 18, 2012. The final exit briefing was conducted by telephone on June 20, 2012. During the inspection, the licensee did not identify any information reviewed by the NRC inspectors as proprietary that was included in the report.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Donna Wichers, Senior Vice President, Americas
Bill Kearney, Director, Safety, Health and Environment
Hilton Ballinger, Plant Supervisor
Larry Arbogast, Radiation Safety Officer

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

040-08502/1201-01	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.
040-08502/1201-03	NCV	Failure to perform evaporation pond inspections as required by License Condition 11.4

Closed

040-08502/1201-03	NCV	Failure to perform evaporation pond inspections as required by License Condition 11.4
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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
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	Nuclear Regulatory Commission
SERP	Safety and Environmental Review Panel
RSO	Radiation Safety Officer
RO	Reverse Osmosis
RWP	Radiation Safety Permit
VIO	violation
µg/l	microgram per liter