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

April 13, 2018

Mr. John H. Ellis, President
Sequoyah Fuels Corporation
P.O. Box 610
Gore, OK 74435

SUBJECT: SEQUOYAH FUELS CORPORATION - NRC INSPECTION REPORT 040-08027/2018-001 AND NOTICE OF VIOLATION

Dear Mr. Ellis:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on March 7-8, 2018, at your Sequoyah Fuels Corporation site near Gore, Oklahoma. 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 enclosed report presents the results of this inspection.

The inspection included a review of decommissioning activities including construction of the onsite disposal cell. The inspection also included a confirmatory radiological survey of areas recently remediated. The preliminary inspection results were presented to you and your staff at the conclusion of the onsite inspection on March 8, 2018. The final inspection results were presented to you by telephone on March 15, 2018.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation involves your failure to have license-required procedures to evaluate the consequences of a spill or incident/event against the reporting criteria provided in 10 CFR 20, Subpart M, and 10 CFR 40.60. The violation was evaluated in accordance with the NRC's Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at (http://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 in the Notice because it was identified by the NRC.

The NRC has concluded that information regarding: (1) the reason for the violation; (2) the corrective actions that have been taken and the results achieved; and (3) the date when full compliance will be achieved is already adequately addressed on the docket in your letter dated March 20, 2018 (Agencywide Documents Access and Management System Accession No. ML18087A045). Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. In that

case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS) accessible from the NRC 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 Dr. Robert Evans, Senior Health Physicist, at 817-200-1234, or the undersigned at 817-200-1191.

Sincerely,

/RA/

Ray L. Kellar, PE, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Docket No. 040-08027
License No. SUB-1010

Enclosures:
1. Notice of Violation
2. NRC Inspection Report 040-08027/2018-001

cc w/encls:
J. Matthews
A. Engstrom
W. Andrews
J. Harris
S. Hill
J. Lewis
M. Broderick

NOTICE OF VIOLATION

Sequoyah Fuels Corporation
Gore, Oklahoma

Docket No. 040-08027
License No. SUB-1010

During an NRC inspection conducted on March 7-8, 2018, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

> License Condition 44 states, in part, that the licensee shall have procedures which will evaluate the consequences of a spill or incident/event against 10 CFR 20, Subpart M, and 10 CFR 40.60 reporting criteria.
>
> Contrary to the above, since 2010, the licensee failed to have procedures in place that would evaluate the consequences of a spill or incident/event against 10 CFR 20, Subpart M, and 10 CFR 40.60 reporting criteria.
>
> This is a Severity Level IV violation (Section 6.3).

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved, is already adequately addressed on the docket in the letter from the licensee dated March 20, 2018 (Agencywide Documents Access and Management System Accession No. ML18087A045). However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation," and send it 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).

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or in the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

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

Dated this 13th day of April 2018.

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	040-08027
License:	SUB-1010
Report:	040-08027/2018-001
Licensee:	Sequoyah Fuels Corporation
Location:	Gore, Oklahoma
Dates:	March 7-8, 2018
Inspectors:	Robert Evans, PhD, CHP, PE, Senior Health Physicist Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
	Linda Gersey, Health Physicist Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
	Martha Poston, Health Physicist Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
	Stephanie Anderson, Health Physicist Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
Approved by:	Ray Kellar, PE, Chief Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Sequoyah Fuels Corporation
NRC Inspection Report 040-08027/2018-001

This U.S. Nuclear Regulatory Commission (NRC) inspection was a routine, announced inspection of decommissioning activities being conducted at the Sequoyah Fuels Corporation site near Gore, Oklahoma. The inspectors concluded that the licensee was conducting decommissioning activities in accordance with regulatory and license requirements, with one exception as discussed below.

Management Organization and Controls

- The licensee had sufficient staff for the work in progress. The licensee's daily QA inspection and audit programs were found to be extensive. The licensee implemented a corrective action program to identify conditions adverse to quality. The licensee conducted its Reclamation Plan changes in accordance with the performance-based license requirements. (Section 1.2)

Radiation Protection/Maintenance and Surveillance Testing

- The licensee implemented its radiation protection and maintenance and surveillance programs in accordance with the requirements of 10 CFR Part 20 and the license. Occupational exposures were small fractions of the regulatory limits. (Section 2.2)

Effluent Control and Environmental Protection

- The licensee was performing the effluent and environmental monitoring programs in accordance with regulatory and license requirements. (Section 3.2)

Low Level Radioactive Waste Storage

- The licensee was managing wastes in accordance with Reclamation Plan requirements. (Section 4.2)

Inspection of Transportation Activities

- The licensee's program for shipping raffinate waste material appeared to meet all procedural and regulatory requirements, but the program was still being developed at the time of the inspection. The NRC plans to inspect the shipping activities during a future inspection. (Section 5.2)

Emergency Preparedness/Fire Protection

- The licensee maintained emergency response programs that included instructions for responding to individuals who become injured at the facility. However, the licensee failed to maintain procedures in place for incident/event reporting in the case of a spill, pond leak, leaks, and excursions. In response, the licensee immediately developed a procedure for incident/event reporting. (Section 6.2)

Closeout Inspection and Survey

- The licensee's radiological survey records indicate that all scan and soil sample results for reclaimed soil located on the west berm of Pond 2 and the former breezeway area were less than the limits specified in the NRC-approved Reclamation Plan. (Section 7.2.a)

- The inspectors' preliminary confirmatory survey results suggest that the licensee had effectively remediated the breezeway area. The final survey results will be presented to the licensee under separate correspondence at a later date. (Section 7.2.b)

Report Details

Summary of Plant Status

The NRC Source Materials License SUB-1010, License Condition (LC) 51, requires the licensee to conduct decommissioning in accordance with the Reclamation Plan dated July 2008, as amended. The licensee commenced with site decommissioning activities in April 2009. To decommission the site, the licensee planned to dismantle and remove systems and equipment, demolish structures, treat sludge and sediments, remediate contaminated soils, and treat wastewater. Most of the residual waste material will be placed in an onsite cell for permanent disposal.

Since the last inspection, the licensee dismantled several structures in the eastern yard and demolished the associated concrete foundations. The licensee also decommissioned approximately half of the electrical switchyard. At the time of the inspection, the licensee continued to decommission the eastern area including removal of subsurface concrete pilings and utilities. In the near future, the licensee plans to permanently remove Pond 3E from service. This pond was used primarily for storage of nitrate-impacted water.

The licensee continued to possess approximately 11,000 tons of bagged raffinate sludge, material previously removed from the clarifier basins. The licensee also possessed approximately 900 bags of sediments removed from the emergency basin, north ditch, and sanitary lagoon. The licensee staged the bagged sludge and sediment material in covered storage cells on the former ore pad. In the near future, the licensee plans to start shipping the raffinate sludge and pond sediments to a uranium mill in Utah for use as alternate feed material. Any raffinate sludge and sediment material that is not shipped offsite will be placed into the onsite disposal cell for permanent disposal.

1 Management Organization and Controls (88005)

1.1 Inspection Scope

The inspectors reviewed the licensee's organization and management controls to ensure that the licensee was maintaining effective oversight of decommissioning activities.

1.2 Observations and Findings

The licensee's organizational structure is presented in Section 2.2 and Figure 2-1 of the license renewal application, referenced in LC 9.1. The organizational requirements for reclamation are also provided in Section 1.0 of the Quality Assurance (QA) Program, referenced in LC 51.C. The licensee's staff consisted of five employees and approximately 30 contractors. The licensee used contractors for QA oversight, geotechnical support, cell construction, radiation safety support, and miscellaneous site maintenance activities as needed. At the time of inspection, all management-level positions were filled with experienced staff. The inspectors concluded that the licensee had sufficient staff to ensure compliance with license and regulatory requirements.

The inspectors reviewed the licensee's oversight programs and interviewed licensee staff responsible for implementing these programs. The oversight programs included routine site inspections, reviews, and audits.

The QA manager was responsible for documenting construction inspection work on a daily basis. These daily QA surveillance reports are required by Section 1.6 of the Technical Specifications, an attachment to the Reclamation Plan. The daily QA reports summarize activities on site and discuss the general conditions of the site and disposal cell. The reports outlined areas needing attention, such as work activities performed by the various contractors, any QA testing and surveying, ongoing discussions as well as key decisions, important communications, and minor design modifications. The inspectors reviewed the daily reports issued since the last routine inspection, conducted in February 2017. The reports provided detailed information of the activities in progress at that time.

Audits are required by LCs 9.1 and 9.4 as well as 10 CFR 20.1101(c). Routine audits were conducted by both internal and external staff. The licensee's 2017 audit included an in-depth review of the radiation protection program, radiation surveys, environmental sample collection, and radiation worker training. Quarterly and annual audits were independently conducted by staff from the parent company, General Atomics. These audits were noted to be extensive. In addition, the licensee held an annual As Low As Reasonably Achievable (ALARA) meeting to discuss ALARA goals. For 2018, the ALARA meeting participants agreed to conduct air sampling during movement of dewatered raffinate sludge material. The meeting participants also agreed to establish an air sampling action level and corrective actions if the action level is exceeded. In summary, the licensee established and implemented extensive audit and self-review programs.

License Condition 51.C requires, in part, that the licensee develop a QA project procedure prior to the initiation of remediation activities that incorporates the Data Management Plan, oversight and QA, soil sampling QA, and the final status survey. Licensee procedure A-303, "Quality Assurance Project Procedure," dated February 29, 2016, established compliance with LC 51.C. The project procedure detailed steps for developing Data Quality Objectives for final status surveys, design for a final status survey, data generation and acquisition, data management, assessment and oversight, and data validation and usability. At the time of the inspection, the February 29, 2018, procedure updates had been reviewed and were put into effect by the licensee on March 8, 2018.

The licensee established a corrective action program in accordance with Section 5 of the QA Program. During 2017, the licensee issued two condition reports. The first condition report involved the discovery of water puddled underneath the base of the synthetic cover liner. As interim corrective actions, the licensee implemented repairs at the top and bottom of the cell to redirect rainwater flow away from the cell, minimize pooling of water, and reduce the potential for erosion. The long-term corrective actions include completion of the disposal cell cover to eliminate the potential for water intrusion into the disposal cell. The second condition report involved the discovery of workers conducting work with insufficient safety gear. Corrective actions included discussions with workers to ensure awareness of the site safety requirements. In summary, the licensee established and implemented a corrective action program for conditions adverse to quality.

License Condition 54 authorizes the licensee to make changes to the license application and Reclamation Plan under certain conditions. The inspectors reviewed the licensee's implementation of its performance-based license. The last formal change occurred in

April 2016. Change CL016 revised Technical Specifications, an attachment to the Reclamation Plan, to provide additional detail for placement of dewatered raffinate sludge into the disposal cell. Since this change was approved, the licensee elected to ship the raffinate sludge material to an out-of-state mill for use as alternate feed material. The licensee may elect to update this change, depending on how much raffinate sludge material is shipped offsite.

License Condition 54.E requires the licensee to submit summaries of each safety and environmental evaluation in an annual report to the NRC. A summary of Change CL016 was submitted to the NRC by letter dated March 8, 2018 (ADAMS Accession Nos. ML18078A750 and ML18078A759). The licensee did not approve any changes during calendar year 2017, and by letter dated March 8, 2018 (ADAMS Accession No. ML18073A146), the licensee notified the NRC that there were no changes for 2017.

1.3 Conclusions

The licensee had sufficient staff for the work in progress. The licensee's daily QA inspection and audit programs were found to be extensive. The licensee implemented a corrective action program to identify conditions adverse to quality. The licensee conducted its Reclamation Plan changes in accordance with the performance-based license requirements.

2 Radiation Protection/Maintenance and Surveillance Testing (83822/88025)

2.1 Inspection Scope

The inspectors examined the licensee's radiation protection and maintenance and surveillance programs for compliance with license and 10 CFR Part 20 requirements.

2.2 Observations and Findings

The licensee monitored site workers for internal and external exposures to radioactive materials. The licensee's procedure H-401, "Personnel Exposure Monitoring," dated May 2016, details the requirements for worker monitoring. The licensee conducted external exposure monitoring using optically stimulated luminescent dosimeters for individuals who were authorized to use the X-ray fluorescence system. Since the last inspection, there were no significant exposures noted from external monitoring.

Internal exposure monitoring was based on analyses of breathing zone lapel samplers and bioassay measurements. The licensee's procedure H-402, "Bioassay Program," dated May 2016, outlined the bioassay program. Bioassays were collected weekly from staff who worked in the restricted area, and the number of samples varied between 19-28 individuals per week. The inspectors reviewed the bioassay data for calendar year 2017 and determined that the maximum uranium content in any bioassay sample was 6.09 micrograms of uranium per liter of urine, which is well below the lowest action level. Of the 1,044 bioassay samples collected and analyzed in 2017, 16 were above the detection limit of 1 microgram per liter. Doses assigned to licensee staff and contractors ranged between ND (none detected) to 0.207 rem during 2017. These assigned doses were well below the regulatory limit of 5 rem per year.

The licensee used hazardous work permits (HWPs) as described in procedure H-204, "Hazardous Work Permit," dated April 2016. These documents serve as radiation work permits but also identify additional existing or potential hazards for the work to be conducted. The inspectors reviewed the open HWPs and was able to tie the HWPs to the external and internal monitoring for individuals working under the HWPs. The NRC inspectors were also able to identify those individuals who wore respiratory protection under an HWP and verified that each individual had current medical approval for respiratory protection and training for use of respiratory protection equipment.

The inspectors reviewed the portable survey instrument calibration records for 19 of the 31 survey instruments in the licensee's possession. These records indicated that survey instruments were calibrated at six month frequencies. All calibrations were current and occurred at the appropriate frequency. The licensee performed daily source checks for each instrument to be used to ensure that instruments were operating properly. Records of these daily checks were spot checked and found to be conducted at the required frequency and documented appropriately.

The inspectors reviewed surveys conducted within and outside the radiologically restricted area. The inspectors concluded that the surveys were properly performed at the required intervals. The inspectors reviewed a selection of daily, weekly, bi-weekly, monthly, quarterly, and annual area radiation surveys for 2017-2018. Radiation survey forms reviewed by the inspectors included daily routine contamination reviews, daily source checks on instruments, conditional releases of equipment, unconditional releases of equipment, characterization surveys, quarterly dose rate surveys, quarterly contamination surveys of unrestricted areas, and other daily, weekly or monthly surveys such as laundry services. The majority of the surveys were determined to be complete with locations of measurements being specified on the form. The inspectors noted that the completed surveys had been reviewed by the radiation safety officer.

The inspectors reviewed surveys of items that were released from the restricted area. The inspectors noted that one pipe release survey indicated that the scale inside the pipe had been analyzed for Ra-226 using an analytical method appropriate for liquids rather than a solid or semi-solid. The analytical method used was intended to be a go/no go determination for Ra-226 in drinking water and tends to underestimate the Ra-226 concentration in samples containing more than 5 picocuries per liter. The sample results were 0.096 picocuries per gram, so the release of this material was not a safety concern, but the constraints of the analytical method were discussed with the licensee to ensure that they understood the potential for underestimating the Ra-226 concentration using this analytical method. The licensee's staff agreed to review their laboratory's analytical methods for solids and semi-solids.

The inspectors reviewed the licensee's radiation safety training program and associated documentation for 2017-2018. The licensee's training program was outlined in procedure A-203, "Training," dated January 31, 2018. The training procedures, training course material for new employees, and annual refresher training course material exams were found to meet the requirements of the license and regulatory requirements. Annual refresher training for 2017 and 2018 was conducted January 16, 2017, and January 31, 2018, respectively. Employees performing duties related to the U.S. Department of Transportation (DOT) hazardous materials shipping had current training within the past three years, in accordance with 49 CFR 172.702. All annual and refresher radiation

safety training activities and records were found to be in accordance with the requirements of regulations and the license.

2.3 Conclusions

The licensee implemented its radiation protection and maintenance and surveillance programs in accordance with the requirements of 10 CFR Part 20 and the license. Occupational exposures were small fractions of the regulatory limits.

3 Effluent Control and Environmental Protection (88045)

3.1 Inspection Scope

The inspectors reviewed the licensee's effluent and environmental protection programs to ensure compliance with regulatory and license requirements.

3.2 Observations and Findings

a. Groundwater Monitoring

The licensee conducts groundwater compliance monitoring as required by LC 49 and as specified in the licensee's February 25, 2005, Ground Water Monitoring Plan (ADAMS Accession No. ML050680228). Routine groundwater monitoring is conducted for constituents of concern that were previously identified in the facility groundwater. License Condition 49.B specifies groundwater protection standards for each of the constituents of concern. The licensee sampled six background wells, 64 compliance wells, and four surface monitoring locations on an annual basis. The Groundwater Monitoring Plan also includes requirements for quarterly sampling of six seep and drainage monitoring locations. Seep, drainage, and surface monitoring results were usually below the groundwater protection standards. Compliance wells that exceed the groundwater protection standards and monitoring locations downgradient of the recovery locations are included in the groundwater Corrective Action Plan (CAP).

The licensee's Groundwater CAP, as approved by the NRC per LC 53, is defined in the August 18, 2010, submittal (ADAMS Accession No.ML102380151). The purpose of the groundwater CAP is to reduce the hazardous constituents in the impacted compliance wells. As the licensee continues decommissioning of the site, impacted soils and shale will be excavated, thus removing and/or eliminating the sources of groundwater contamination on the licensee's property.

The inspectors reviewed the results of the 2016 Annual Groundwater Report dated March 28, 2017 (ADAMS Accession No. ML17103A379). This report contains monitoring program changes, analytical results for all compliance wells, background wells, seep and drainage locations, and surface water monitoring. Additionally, the report includes trending of sample results for compliance and corrective action monitoring. The licensee continues to make progress in groundwater cleanup as decommissioning activities are completed. The inspectors found the report to be in compliance with LCs 49 and 53. The 2017 Annual Groundwater Report was not available for review during the inspection and will be evaluated during a future inspection.

b. Environmental Protection

The licensee's environmental protection program is defined in Chapter 5 of the Reclamation Plan, approved by the NRC in letter dated December 21, 2000 (ADAMS Accession No. ML102740446). The environmental monitoring program consists of four fence line air monitoring locations, storm water discharge from Outfall-008, seven radon monitoring locations, and annual monitoring of the ammonium nitrate fertilizer program. The State of Oklahoma Department of Environmental Quality permits the land application of treated waste water and the discharge of storm water in Outfall-008 through the licensee's Oklahoma Pollution Discharge Eliminations System Permit.

The licensee provides a semi-annual effluent monitoring report which includes the fence line air monitoring results and the outfall releases to the NRC as required by 10 CFR 40.65. The inspectors noted that the results for radon monitoring at the unrestricted areas were not included in the semi-annual report. Historically, when the facility was operating, radon was not considered a significant effluent and therefore not reported. The licensee stated that they would include the results of the radon monitoring in future semi-annual reports. The inspectors reviewed the licensee's July 25, 2017 (ADAMS Accession No. ML17216A295), and January 30, 2018 (ADAMS Accession No. ML18040B126), semi-annual effluent reports. The inspectors noted that the analytical results indicated there were no airborne releases of uranium, Th-230, or Ra 226 during 2017. Liquid samples from the storm water discharged from Outfall-008 in 2017 indicated less than one percent of the average annual limits for uranium, thorium-230, and Ra-226. The inspectors determined that the results showed compliance with regulatory and license requirements.

An annual report is provided to the NRC providing a summary of the licensee's land application of ammonium nitrate fertilizer. Representatives of the Oklahoma State University Extension Service continued to provide oversight of the land application program. The inspectors reviewed the licensee's April 6, 2017, Ammonium Nitrate Fertilizer Program 2016 Report (ADAMS Accession No. ML17115A196). The report included the concentration and total gallons applied to the land area, the pre-and post-soil analysis, and forage analysis results. The inspectors noted that forage collection during 2016 had elevated molybdenum concentrations and the use of hay was restricted by the licensee. The inspectors determined that the results showed compliance with regulatory and license requirements.

3.3 Conclusion

The licensee was performing the effluent monitoring and environmental monitoring programs in accordance with regulatory and license requirements.

4 Low Level Radioactive Waste Storage (84900)

4.1 Inspection Scope

The inspectors reviewed the licensee's management of wastes in accordance with Reclamation Plan requirements.

4.2 Observations and Findings

The inspectors conducted a site tour with licensee representatives to observe activities in progress. The licensee continued to decommission the eastern area of the site. The work in progress included removal of concrete footings, soil, and underground utilities. Contaminated material was staged for disposal within the cell, while clean material was staged for survey and release or reuse. The licensee was remediating approximately half of the electrical switchyard. To support reclamation work in the eastern area, the licensee installed or relocated trailers for use as access points and laundry facilities.

Clarifiers 2A and 3A continued to be in service for storage and cleanup of contaminated waste water. The raffinate sludge and pond sediments continued to be staged for eventual shipment offsite or movement into the disposal cell. During the previous inspection, the inspectors noted that about 60 bags of raffinate sludge had been placed into the disposal cell. Since the previous inspection, the licensee removed the bags from the disposal cell. As described in the next section, the licensee was preparing to ship the raffinate sludge material to an out-of-state mill. These shipments are scheduled to begin at the end of March 2018.

License Condition 46 requires the licensee to perform and document daily inspections of tailings and waste retention system during normally scheduled workdays. The inspectors reviewed the licensee's procedure O-295, "Daily Impoundment Inspection," dated March 31, 2016, which provided the instructions for the performance and documentation of daily inspections of the waste retention system. The inspectors completed a walk down of the procedure with licensee personnel and observed the performance of the procedure. The licensee's staff maintained a log book of these inspections. The logbook entries for 2017-2018 were reviewed by the inspectors. The logbook entries included the impoundment name, level, any observation of importance, and the initials of the person conducting the walk down.

License Condition 50.C specifies that the temporary raffinate sludge storage cells covers are to be periodically inspected and repaired as necessary, and verify that liquid was not ponding inside the cells. The licensee had established a procedure that specified a monthly inspection interval. The licensee has constructed 14 storage cells. Overall, the cell covers were in good condition. As documented in the January 2018 monthly report, the licensee noted that no bags had shifted, some vents on top of the cells needed repair, one of the cells' railroad tie (used to anchor the covers at the base of the cells) had shifted and needed realignment, and there was no drainage present in the cells. The licensee recently removed some the bags from the cells, and the inspectors noted there were no observance of ponding of water within these cells.

The licensee previously noted that the procedure included a step that could not be performed as written. The procedure instructed the individual to check the cell for accumulation of water internally by opening the ball valve on the drain of the cell and wait several seconds to see if any fluid drains out. This step could not be performed as written because most cells no longer had ball valve systems in place. The licensee's staff chose to skip this step instead of revising the procedure. The inspectors concluded that this step should be removed from the procedure if the step is not able to be completed as written.

The licensee was in the process of acquiring and staging erosion protection rock for use in future disposal cell construction activities. At the time of the inspection, the licensee had staged roughly 4,000 tons of rock north of the disposal cell. The licensee estimates that it needs approximately 27,000 tons of rock to complete the project. The licensee plans to continue to acquire and stage the rock in 2018.

By letter dated August 28, 2015 (ADAMS Accession No. ML15251A356), the licensee submitted a license amendment request for approval of two additional sources of rock. The licensee has since concluded that the original quarry could provide the quantity of rock needed to support construction activities. By letter dated March 8, 2018 (ADAMS Accession No. ML18073A130), the licensee subsequently withdrew the license amendment request.

The licensee continues to store drummed wastes, including uranium, for eventual transfer or disposal. The drums were being stored in three intermodal containers located within the restricted area. Recently, the licensee identified that at least one drum showed signs of deterioration. This particular drum was subsequently transferred into an overpack in January 2018.

Since the last inspection, the licensee completed construction of the disposal cell leachate and leak detection drain lines for each of the three cell phase areas. The permanent piping and two collection drain tanks were installed in the fall of 2017. The permanent plant equipment was in service during the inspection.

The licensee also completed remediation of Catchment Trench 3 in October 2017, a former French drain system located south of Pond 2. The catchment trench was part of the groundwater recovery system and was used to collect nitrate-impacted groundwater. The drain, collection tank, and pump system were removed. The nitrate-impacted groundwater that was perched on the underlying bedrock was pumped out for treatment.

In response to recent seismic activity in Oklahoma, the licensee requested that its engineering consultants conduct a review of disposal cell design, to ensure that the cell could withstand an earthquake (ADAMS Accession Nos. ML17068A057 and ML17068A053). Appendix F to the Cell Construction Plan which is an attachment to the NRC-approved Reclamation Plan, discusses the seismic and static stability of the disposal cell. Appendix F documents that the peak anticipated horizontal acceleration at the site is conservatively estimated to be 0.27 g, where g is the acceleration of gravity. The licensee's consultants concluded that the peak ground acceleration of 0.006 g at the site from a nearby 5.8 magnitude event would be significantly lower than the peak ground acceleration of 0.27 g used in the cell slope stability analysis. Thus, the seismic design of the disposal cell was conservative relative to the magnitude of the earthquakes that have recently occurred in Oklahoma.

During site tours, the inspectors conducted independent radiological surveys within the restricted area. Ambient gamma radiation levels were measured with a Ludlum Model 19 survey meter (NRC No. 015530, calibration due date of July 25, 2018, calibrated to Ra-226). With a background of approximately 12 microRoentgen per hour (μR/hr), the highest measurement reading was measured on bagged raffinate sludge at approximately 2,200 μR/hr. No area was identified that met the definition of a radiation area (greater than 5,000 μR/hr at one foot). The inspectors' radiation measurements were consistent with the measurements documented in routine surveys made by the

licensee. In addition, the inspectors noted that the restricted area was appropriately posted to indicate existing conditions.

4.3 Conclusion

The licensee was managing wastes in accordance with Reclamation Plan requirements.

5 Transportation Activities (86740)

5.1 Inspection Scope

The inspectors reviewed the transportation program to ensure that the licensee was transporting wastes in accordance with license and regulatory requirements.

5.2 Observations and Findings

At the time of the on-site inspection, no radioactive material was being shipped. The licensee was preparing for a shipping campaign of approximately 11,500 bags of raffinate sludge that originated from the former clarifier basins. All work related to this shipping campaign will be performed under a temporary operating procedure and/or a HWP. The inspectors reviewed the draft temporary procedure. The draft procedure included health and safety procedures for handling waste bags, radiation exposure monitoring, and DOT requirements. The inspectors noted that the draft procedure appeared to meet all regulatory requirements.

The licensee plans to place four bags of raffinate into one large supersack, measuring 8 feet by 8 feet, for loading onto a semi-trailer truck. The large supersacks will be stacked and covered with a tarp for transport to a uranium mill facility in Utah. The NRC plans to review the final procedural documents and shipping activities during a future inspection.

The licensee was in the process of providing all required DOT training to individuals involved in the shipping campaign. The inspectors reviewed a portion of the function specific training documents and found them to meet the DOT training and recordkeeping requirements. The RSO had a current DOT certificate documenting completion of required training. The final DOT training records will be reviewed for completeness during a future inspection.

5.3 Conclusion

The licensee's program for shipping raffinate waste material appeared to meet all procedural and regulatory requirements, but the program was still being developed at the time of the inspection. The NRC plans to inspect the shipping activities during a future inspection.

6 Emergency Preparedness/Fire Protection (88050)

6.1 Inspection Scope

The inspectors reviewed the licensee's emergency preparedness and fire protection programs to ensure compliance with regulatory and license requirements.

6.2 Observations and Findings

The licensee's emergency response instructions were outlined in procedure X-100, "Emergency Response," dated June 30, 2016. The procedure acknowledged that the site was no longer in operation. Thus, the events of concern were those common to the construction industry including slips, trips and falls, fire, and severe weather events. Additionally, this site also contained radioactive material that could be involved in a contamination event. The procedure noted that the senior licensee employee will function as the emergency coordinator.

The emergency response procedure discussed safety precautions, training requirements, equipment availability, facilities to be utilized, and emergency coordinator duties. The procedure clearly specified that the presence of radioactive material would not influence response to fire or personnel injury. Attachment 1 of the procedure presented an emergency response site map that detailed locations of hazardous materials. The list of hazards was updated annually through a Tier II Report sent electronically to the Oklahoma Department of Environmental Quality, most recently on February 22, 2018, who forwarded the report to local agencies. Attachment 2 of the procedure provided contact information for emergency services supporting the site. The NRC inspectors verified that the information provided in this attachment was current. Attachment 3 to the procedure contained a bullet list of information in the form of a notice to emergency response personnel.

The NRC inspectors reviewed data from the monthly completion of fire extinguisher inspections which listed the type, content amount, and location of extinguishers and they verified the current inspection data for a random selection of fire extinguishers located across the site.

License Condition 44 states, in part, that the licensee shall have procedures which will evaluate the consequences of a spill or incident/event against 10 CFR 20, Subpart M, and 10 CFR 40.60 reporting criteria. If these criteria are met, then the licensee shall report to the NRC Operations Center as required. The inspectors discovered that the licensee did not have procedures to evaluate the consequences of a spill or incident/event against regulations.

The licensee had a procedure (G-004, "Reporting Requirements for Abnormal Events," Rev. 24) which would have met the requirements of LC 44, but the procedure expired on March 20, 2010, and no current procedure was in place that met the intent of LC 44 as stated. License Condition 44 included instructions for making a report to the NRC Region IV Uranium Branch Chief and NRC Headquarters Project Manager by telephone or email within 48 hours of the event which may not have been accomplished by following 10 CFR 40.60 reporting requirements only. The noncompliance with the license had existed for approximately eight years. This was a violation of LC 44 requirements (VIO 040-08027/1801-01).

In response to the NRC's inspection finding, the licensee established a new operating procedure A-207, "Reporting Requirements for NRC," dated March 20, 2018. After the onsite inspection, the licensee responded in writing to the violation. The cause of the violation was attributed to an administrative error. The inspectors concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full

compliance was achieved, is adequately addressed in the licensee's letter dated March 20, 2018 (ML18087A045).

6.3 Conclusion

The licensee maintained emergency response programs that included instructions for responding to individuals who become injured at the facility. However, the licensee failed to maintain procedures in place for incident/event reporting in the case of a spill, pond leak, leaks, and excursions. In response, the licensee immediately developed a procedure for incident/event reporting.

7 Closeout Inspection and Survey (83890)

7.1 Inspection Scope

The inspectors reviewed the licensee's decommissioning and associated radiological surveys to ensure compliance with license requirements.

7.2 Observations and Findings

a. Review of Final Status Survey Results

License Condition 51 stipulates that site decommissioning shall be conducted in accordance with the instructions provided in the Reclamation Plan dated January 2008, as amended (ADAMS Accession Nos. ML080220345 and ML081960238). Prior to the onsite inspection, the licensee excavated the eastern portion of the property including surface and subsurface concrete and utilities. The reclamation work resulted in a trench in the former breezeway area that was approximately 690 square meters in size. The soil removed from the breezeway area was being staged in 6-inch lifts on the western berm of Pond 2. This soil is expected to be reused during construction of the disposal cell cover. The size of the soil laydown area on the west berm was approximately 3,800 square meters.

Section 3.2.3 of the Reclamation Plan specifies that the licensee will conduct final status surveys based on the radionuclides of concern for that area. In accordance with the Reclamation Plan, the radionuclide of concern in the breezeway area was natural uranium. The final status survey of the breezeway area trench included measurement of ambient gamma radiation levels and collection of soil samples.

Based on the licensee's Figure Att. B-1, "Classification of Areas For Final Status Survey," the breezeway area was classified as a MARSSIM Class 3 area. (Area classifications are defined in NUREG-1575, Revision 1, Mulit-Agency Radiation Survey and Site Investigation Manual (MARSSIM)). According to MARSSIM, Class 3 areas have the lowest potential for elevated radioactivity. For this reason, MARSSIM recommends that scan surveys be performed in outdoor areas with the highest potential for contamination based on professional judgment.

The inspectors reviewed the licensee's breezeway gamma radiation scan survey results. With a background of 11,000-12,000 counts per minute (cpm), the highest scan survey result was 15,000 cpm. The scan survey results were well below the action level of three times background (33,000-36,000 cpm). The action level is used, in part, to

screen soil for reuse or disposal. The licensee's staff also collected nine soil samples from this area. The licensee analyzed the soil samples using an x-ray fluorescence (XRF) meter to measure the uranium concentrations. The soil sample results were less than or equal to 11 micrograms of uranium per gram of soil (µg/g) with a cleanup level limit of 150 µg/g. All samples results were less than the respective action levels.

The inspectors also reviewed the licensee's scan survey results for the soil in the Pond 2 west berm laydown area. The soil was placed onto the berm in 6-inch lifts. The licensee surveyed each of the 13 lifts. With a background of 7,500-10,000 cpm, depending on lift, the highest scan survey result was 18,000 cpm. All scan survey results were less than the action level of three times background. The licensee also collected composite soil samples from each lift. The licensee collected a total of 39 samples from the 13 lifts. Using the XRF meter, the highest sample result was 43 µg/g with a cleanup level limit of 150 µg/g. Based on these sample results, the staged soil could be used in the construction of the disposal cell cover.

In summary, the licensee's records indicate that the excavated area had been effectively remediated. The licensee's scan survey results were less than the action level in both the breezeway and Pond 2 west berm areas. In addition, the licensee collected a sufficient number of soil samples based on the size of the survey unit. All soil sample results were less than the cleanup level specified in the Reclamation Plan.

b. Confirmatory Survey

The inspectors conducted a confirmatory survey of the breezeway area. The purpose of the confirmatory survey was to confirm the effectiveness and accuracy of the licensee's final status survey relative to whether the area met the acceptance criteria established in the Reclamation Plan. The inspectors also conducted a confirmatory survey of the west berm area of Pond 2 to confirm that the reclaimed soil could be reused in the construction of the disposal cell cover. The inspectors' confirmatory survey included measurement of ambient gamma exposure rates and collection of soil samples.

The inspectors conducted the gamma scan using a Ludlum Model 12 survey meter with Ludlum Model 44-10 probe (NRC No. 20888G, calibration due date of October 21, 2018, calibrated to Cs-137) and Ludlum Model 19 microRoentgen meter (NRC No. 015530, calibration due date of July 25, 2018, calibrated to Ra-226). Prior to conducting the gamma scan, the inspectors measured the ambient background level to establish action levels for the two survey meters. The licensee chose to collect their background measurements within the survey unit itself, but the NRC chose to measure background outside of the survey units. The NRC's background measurement was recorded outside of the restricted area in the yard adjacent to the administrative building. Because the licensee's action level was three times the background level, for consistency, the inspectors' action levels were also set at three times the measured background level.

The inspectors conducted walk-over gamma scan surveys of the breezeway excavated area. With a background of 12,000 cpm for the Model 12 survey meter, the count rates in the breezeway area ranged from 20,000 cpm to 22,000 cpm. With a background of 10-12 µR/hr for the Model 19 survey meter, the exposure rates in the breezeway area ranged from 20-24 µR/hr. The elevated count rate and exposure rate readings were attributed to radiation "shine" from the nearby disposal cell. Regardless, all survey measurements remained below the action level of three times background.

The inspectors also conducted walk-over scan surveys of the west berm of Pond 2. These survey results were consistent with background levels for the two meters (12,000 cpm and 12 μR/hr, respectively). No elevated areas of radioactivity were identified during the surveys of the west berm area, and the survey results were below the action level.

The inspectors collected five soil samples for comparison to the cleanup level specified in the Reclamation Plan of 100 picocuries per gram, which is equivalent to 150 μg/g. Three samples were collected from the breezeway area trench, and two samples were collected from the west berm of Pond 2. Immediately after the soil samples were collected, the licensee conducted a measurement of the five samples using its XRF meter. The licensee's screen indicated that all samples contained less than or equal to 10 μg/g of uranium, results that were well below the cleanup level of150 μg/g. Based on all available information, the licensee indicated that it may elect to backfill the excavated trench at risk, immediately after the onsite inspection.

The inspectors submitted the five soil samples to the NRC's contract laboratory, Oak Ridge Associated Universities in Oak Ridge, Tennessee, for analysis. The samples were to be analyzed by gamma spectroscopy for determination of total uranium concentrations. The licensee collected split samples for possible offsite analysis. At the end of the inspection period, the NRC's contract laboratory had not completed its analysis of the five sample results. The inspectors will present the final soil sample results to the licensee at a later date under separate correspondence.

7.3 Conclusions

The licensee's radiological survey records indicate that all scan and soil sample results for reclaimed soil located on the west berm of Pond 2 and the former breezeway area were less than the limits specified in the NRC-approved Reclamation Plan. The inspectors' preliminary confirmatory survey results suggest that the licensee had effectively remediated the breezeway area. The final survey results will be presented to the licensee under separate correspondence at a later date.

8 Exit Meeting

The inspectors reviewed the inspection scope and preliminary results during an exit meeting conducted at the conclusion of the onsite inspection on March 8, 2018. The final inspection findings were presented to the licensee's staff by telephone on March 15, 2018. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary.

SUPPLEMENTAL INFORMATION

Partial List of Persons Contacted

Sequoyah Fuels Corporation

J. Ellis, President
R. Miller, Contractor, RMA
S. Munson, Manager, Health, Safety and Environment
K. Schlag, Manager, Quality Assurance, RMA

Oklahoma Department of Environmental Quality

J. Caldwell, Environmental Program Specialist

Inspection Procedures Used

IP 83822	Radiation Protection
IP 83890	Closeout Inspection and Survey
IP 84900	Low Level Radioactive Waste Storage
IP 86740	Inspection of Transportation Activities
IP 88005	Management Organization and Controls
IP 88025	Maintenance and Surveillance of Safety Controls
IP 88045	Effluent Control and Environmental Protection
IP 88050	Emergency Preparedness
IP 88055	Fire Protection

Items Opened, Closed, and Discussed

Opened

040-08027/1801-01 VIO Failure to implement procedure required by license

Closed

040-08027/1801-01 VIO Failure to implement procedure required by license

Discussed

None

List of Acronyms

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
CAP	corrective action program
cpm	counts per minute
DOT	U.S. Department of Transportation
g	acceleration of gravity
HWP	Hazardous Work Permit
LC	License Condition
MARSSIM	Mulit-Agency Radiation Survey and Site Investigation Manual
µg/g	micrograms per gram
µR/hr	microRoentgens per hour
NRC	U.S. Nuclear Regulatory Commission
QA	Quality Assurance
XRF	x-ray fluorescence

NRC INSPECTION REPORT 040-08027/2018-001 AND NOTICE OF VIOLATION, SEQUOYAH FUELS CORPORATION DATED APRIL 13, 2018

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