



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

January 31, 2012

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

SUBJECT: NRC INSPECTION REPORT 040-08027/11-002 AND NOTICE OF VIOLATION

Dear Mr. Ellis:

This refers to the inspection conducted on November 1-2, 2011, at your Sequoyah Fuels Corporation site located 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 preliminary inspection findings were discussed with you at the conclusion of the onsite inspection. The final exit briefing was conducted with you by telephone on January 17, 2012.

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 maintain records of changes made pursuant to the performance-based license, including written safety and environmental evaluations that provide the basis for determining whether the changes are in compliance with license requirements. This violation was evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited because the NRC identified the violation rather than your staff. In addition, the violation is being cited to ensure that you provide us with the corrective actions necessary to prevent recurrence of the violation.

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

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 Mr. Robert Evans, Senior Health Physicist, at 817-200-1234 or the undersigned at 817-200-1191.

Sincerely,

/RA/

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

Docket: 040-08027

License: SUB-1010

Enclosures:

1. Notice of Violation
2. NRC Inspection Report 040-08027/11-002
3. NRC Information Notice 96-28

cc w/Enclosures 1 and 2:

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NOTICE OF VIOLATION

Sequoyah Fuels Corporation
Gore, Oklahoma

Docket: 040-08027
License: SUB-1010

During an NRC inspection conducted on November 1-2, 2011, one violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

License Condition 54.a states, in part, that the licensee may, without obtaining a license amendment and subject to the conditions specified in paragraph 54.b, make changes in the facility as described in the license application.

License Condition 54.b states, in part, that the licensee shall obtain a license amendment prior to implementing a proposed change, subject to any one of eight conditions.

License Condition 54.e states, in part, that the licensee shall maintain records of any changes made pursuant to this condition until license termination. These records shall include written safety and environmental evaluations made by the Plant Review Committee that provide the basis for determining whether the changes are in compliance with the requirements of paragraph 54.b.

Contrary to the above, on November 1, 2011, the NRC inspectors determined that the licensee had made various changes to the design and as-built construction of the onsite disposal cell during May-November 2011. These changes deviated from the requirements specified in the NRC-approved reclamation plan, a part of the license application. The Plant Review Committee failed to maintain records of these changes, including the written safety and environmental evaluations, prior to implementation of these changes. The changes include use of clean soil in the construction of the disposal cell, use of sand material with different technical characteristics, and installation of leachate system piping with a different spacing grid.

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

Pursuant to the provisions of 10 CFR 2.201, Sequoyah Fuels Corp., 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 2 working days.

Dated this 31st day of January 2012

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-08027

License: SUB-1010

Report: 040-08027/11-002

Licensee: Sequoyah Fuels Corporation

Location: P.O. Box 610
Gore, Oklahoma

Dates: November 1-2, 2011

Inspectors: Robert Evans, PE, CHP, Senior Health Physicist
Repository and Spent Fuel Safety Branch

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

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

Attachment: Supplemental Inspection Information

EXECUTIVE SUMMARY

Sequoyah Fuels Corporation NRC Inspection Report 040-08027/11-002

This inspection was a routine, announced inspection of decommissioning activities being conducted at the Sequoyah Fuels Corporation site in Gore, Oklahoma. Overall, the licensee was conducting decommissioning activities in accordance with the NRC-approved reclamation plan, with one exception as described below.

Onsite Construction

- During the inspection, the licensee was constructing the Phase II disposal cell using the guidance provided in the technical specifications, Attachment A to the NRC-approved reclamation plan (Section 1.2.a).
- The inspectors observed several construction methods being used by the licensee that were not specifically described in the reclamation plan (Section 1.2.b).
- The licensee's failure to maintain records of changes made to the reclamation plan pursuant to the performance-based license condition, including records of the safety and environmental evaluations, was identified as a violation of the license (Section 1.2.c).

Radiation Protection

- The licensee conducted its radiation protection program in accordance with the requirements of 10 CFR Part 20 and the license (Section 2.2).

Report Details

Summary of Plant Status

At the time of the inspection, the licensee was conducting site decommissioning in accordance with the NRC-approved reclamation plan. During decommissioning, the licensee plans to dismantle and remove systems and equipment, demolish structures, treat site sludges and sediments, remediate contaminated soils, and treat wastewater. Most of the residual waste material will be placed in an onsite disposal cell for permanent disposal. The disposal cell will be constructed in three phases. The disposal cell was originally designed for a capacity of 8.3 million cubic feet of waste material, although the cell can be modified to accommodate up to 11 million cubic feet of material.

The Phase I area encompasses the northeastern portion of the cell and is approximately 11,400 square meters in size. The licensee began placing material into this portion of the cell during June 2010. At the time of this inspection, the Phase I area had been filled with waste material and was covered with an interim cover. The Phase II area encompasses the northwestern portion of the cell and is approximately 18,600 square meters in size. During the inspection, the licensee was placing building debris and Pond 2 wastes into this portion of the disposal cell. During the spring of 2012, the licensee plans to construct the base for the Phase III portion of the disposal cell.

In recent weeks, a contractor for the licensee demolished the former solvent extraction building and the miscellaneous digest building. The contractor also demolished, sectioned, and disposed of the former firewater storage tank. At the time of the inspection, the contractor was demolishing portions of the western end of the main process plant. Buildings and structures expected to be demolished in the near future include the remainder of the western portion of the main process plant and the evaporator structure. The licensee stated that some specialty metals, currently located in the main process plant, may be recovered and decontaminated for recycling prior to building demolition and disposal.

The licensee recently started decommissioning of the DUF₄ (depleted uranium tetrafluoride) building. During the inspection, the licensee and its contractor were removing and salvaging equipment from the DUF₄ building. The equipment being salvaged included electrical switchgear and potentially contaminated process equipment. The salvaged equipment will be temporarily stored in the south cell room of the main process plant.

A different contractor was removing radioactive material from the floor of Pond 2. The licensee was combining Pond 2 material with building demolition debris in Phase II of the disposal cell. The licensee was conducting radiological surveys in Pond 2 as necessary to support decommissioning of the pond. Following decommissioning of the pond, the licensee intends to conduct a final status survey of the pond floor to ensure that reclamation activities were effective. After completion of the final status survey, the licensee plans to partially backfill the pond to minimize water intrusion into the pond.

The licensee still possessed dewatered raffinate sludge. Most of the raffinate sludge originated from the four onsite clarifier basins. The licensee recently dewatered and bagged sludge material from the emergency basin and north ditch areas. In the near future, the licensee plans to remove, dewater, and bag additional sludge material from the sanitary lagoon. The licensee plans to treat, sample, and release wastewater in accordance with license and state permit requirements. The sludge continues to be staged on the former yellowcake storage pad for

possible transfer to an out of state uranium mill for processing as alternate feed material. If the licensee is unable to transfer the material, the NRC-approved Reclamation Plan allows the licensee to dispose of the raffinate sludge in the onsite disposal cell.

1 Onsite Construction (88001)

1.1 Inspection Scope

The inspectors reviewed the licensee's decommissioning activities to determine if these activities were being conducted in accordance with the NRC-approved reclamation plan, license conditions, and construction specifications.

1.2 Observations and Findings

a. Overview of Construction Activities

License Condition 51 allows the licensee to conduct site decommissioning in accordance with the NRC-approved reclamation plan. The licensee finished the construction of the Phase II disposal cell base since the last inspection. During the inspection, the licensee was placing contaminated wastes into the Phase II portion of the disposal cell. The licensee began by placing a layer of calcium fluoride material at the bottom of the cell, as required by the reclamation plan.

After the licensee finished the installation of the calcium fluoride layer, the licensee began placing abandoned equipment into the cell that had been previously stored on the yellowcake ore pad. The licensee was using Type A material (material that contained relatively high concentrations of radionuclides) and calcium fluoride material as filler material around the disposed equipment. Most of the Type A material originated from Pond 2. The licensee then started demolishing site structures and placing the building debris into Phase II of the disposal cell. The licensee was using Type A material as filler material around the building wastes. The licensee was also constructing storm water retention berms around the Phase II area in conjunction with placement of radioactive waste material into this portion of the disposal cell.

Once all Type A material has been removed from Pond 2 and placed into the disposal cell, the licensee plans to remove the excess Type A material that was being temporarily staged at the top of the Phase I area for use in the construction of the Phase II area. At some point in the future, the Phase II area will reach the height of the Phase I area, and the licensee will continue to place material into both areas until the design height has been reached. At that point, the licensee will then construct the final cover over these two areas. As noted earlier, the licensee plans to begin construction of the base of the Phase III portion of the disposal area during 2012.

b. Observation of Construction Activities

The inspectors conducted tours of the Phase II construction area to observe work in progress. The inspectors compared the work in progress to the technical specification requirements specified in the reclamation plan. At the time of the inspection, a contractor for the licensee was mixing and compacting waste material containing a mixture of Types A and C material in the Phase II portion of the disposal cell. A different

contractor was excavating potentially contaminated soil from Pond 2 and transferring this material to the disposal cell. The inspectors conclude that these construction activities were being conducted in a safe and orderly manner.

On occasion, the licensee installed thin layers of clean soil on top of the contaminated material. The licensee was using this clean fill to provide a barrier between the contaminated wastes and the construction vehicles that worked within the disposal cell. The clean fill material originated from the former tornado berm located adjacent to the yellowcake storage pad. The licensee was also using this clean fill material in the construction of the storm water retention berms located inside of the cell perimeter.

The technical specifications for disposal cell construction are provided in Attachment A to the reclamation plan. The inspectors compared the work in progress to the technical specification requirements. The inspectors identified several construction methods being used by the licensee that were not specifically addressed in the reclamation plan:

- The reclamation plan provides a thickness limit (2 feet) for lifts containing Types C and D material, but the reclamation plan is silent on the required thickness of lifts containing Types A and B material. The inspectors were concerned that lifts being constructed in thicknesses greater than 2 feet may not be properly compacted, resulting in future settlement issues. During the inspection, the inspectors observed the licensee constructing a lift containing Types C and A material. The lift was observed to be greater than 2 feet thick.
- The reclamation plan does not provide quality control/quality assurance requirements, such as density limitations and compaction tests, for compacted lifts of Types A and B material, although the reclamation plan provides quality assurance/quality control requirements for compacted lifts containing Types C and D material.
- The reclamation plan does not provide a specification limit for voids, although the reclamation plan instructs the licensee to minimize void spaces. The licensee elected to use a void limit of 6 inches. At the time of the inspection, the licensee did not have a technical justification in place for this numerical limit.
- The reclamation plan states that clean soil will be used in the outside slopes of the cell, after the cell has been constructed. For contamination control reasons, the licensee was adding clean soil to the disposal cell during cell construction, a practice not specifically discussed in the reclamation plan. Although the cell is designed to accept a range of disposed material, the amount of clean soil that could be added to the cell, without exceeding the upper capacity limit of the cell, was not clearly defined.

Because the reclamation plan did not specifically address these particular construction methods, the licensee's use of these methods was not a compliance issue.

c. Performance-Based License Review

In accordance with License Condition 54, the licensee is authorized to make certain changes to the license application, including the reclamation plan, under certain

instances. The inspectors reviewed the licensee's implementation of its performance-based license, including design changes to the construction of the disposal cell. At the time of the inspection, the licensee had completed one technical review involving changes to the reclamation plan. However, the inspectors noted that the licensee implemented several other changes to the as-built construction of the disposal cell, although the licensee had not formally completed its technical review and approval of these changes through the performance-based license process. These changes were noted to be deviations from the NRC-approved technical specifications:

- The licensee changed the source of the sand used in the construction of the Phase II disposal cell base during May 2011. The new sand had different physical characteristics than the sand specified and approved in the reclamation plan.
- The licensee changed the leachate system piping spacing for the Phase II disposal cell base due to the change in sands. The new spacing was different than the spacing specified in the technical specifications. The licensee implemented the change in the construction of the Phase II base during May 2011.
- The licensee began constructing the storm water retention berms with Type C material and clean soil in Phase II during July 2011; although, the reclamation plan specifies that the berms will consist primarily of Type D material with minor amounts of Type C material. In addition, during the inspection, the licensee was adding clean soil to the disposal cell, an activity that will increase the volume of the disposal cell.
- The licensee was mixing Type A material with Type C material, a combination that was not specifically discussed in the reclamation plan. Section 6.2.4 of the technical specifications indicates that Type C materials will be placed directly over a layer of Type A materials and that Type C materials can be mixed with Type B materials.
- Finally, Attachment E to the reclamation plan states that the Pond 2 material (Type A material) will be solidified with cement or fly ash. During the inspection, the licensee was placing Pond 2 material directly into the Phase II portion of the disposal cell without being solidified with cement or fly ash.

License Condition 54.a states, in part, that the licensee may make changes in the facility as described in the license application without obtaining a license amendment and subject to the conditions specified in paragraph 54.b. License Condition 54.b states, in part, that the licensee shall obtain a license amendment prior to implementing a proposed change, subject to any one of eight conditions. Finally, License Condition 54.e states, in part, that the licensee shall maintain records of any changes made pursuant to the performance-based license, and these records shall include written safety and environmental evaluations made by the Plant Review Committee (PRC).

Contrary to the above, the NRC inspectors determined that the licensee had implemented various changes to the onsite disposal cell during May-November 2011, changes that deviated from the requirements specified in the reclamation plan. The licensee implemented these changes without maintaining records of the changes, including a written safety and environmental evaluation by the PRC. This failure was identified as a violation of License Condition 54.e (VIO 040-08027/1102-01).

In addition, the inspectors reviewed other proposed changes under consideration by the licensee at the time of the onsite inspection. One proposed change included assignment of new responsibilities to the quality assurance manager. The licensee proposed to have the quality assurance manager become responsible for approving construction changes, an authority that is contrary to the requirements of the technical specifications. According to the technical specifications, construction-related approvals are the responsibility of the reclamation project manager. In addition, this proposed change would make the quality assurance manager responsible for approving work he was responsible for independently reviewing. In other words, this change would eliminate the separation between construction work and quality assurance oversight of this work. The inspectors discussed this potential discrepancy with the licensee's representatives. The licensee's representatives stated that they would reconsider the proposed change to the quality assurance manager's approval authority.

1.3 Conclusions

During the inspection, the licensee was constructing the Phase II disposal cell using the guidance provided in the technical specifications, Attachment A to the NRC-approved reclamation plan. The inspectors observed several construction methods being used by the licensee that were not specifically described in the reclamation plan. The licensee's failure to maintain records of changes made to the reclamation plan pursuant to the performance-based license condition, including records of the safety and environmental evaluations, was identified as a violation of the license.

2 **Radiation Protection (83822)**

2.1 Inspection Scope

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

2.2 Observations and Findings

a. Hazardous Work Permits

Under the licensee's radiation protection program, all decommissioning work involving radioactive materials was performed under the instructions provided in a hazardous work permit (HWP) generated by the licensee's health physics supervisor. In addition to the HWPs, each task being performed by the contractors was evaluated under an activity hazard analysis by the contractor's health and safety supervisor for additional industrial safety-related instructions. Prior to conducting work under an HWP, all workers were trained on the instructions provided by the HWP and the activity hazard analysis. The licensee generated 22 HWPs for reclamation work conducted during 2011. The inspectors reviewed these HWPs and found them to contain sufficient information to mitigate radiation hazards.

b. Occupational Exposures

The inspectors reviewed the licensee's occupational exposure records for the April-October 2011 time frame. To monitor for external exposures, thermoluminescent dosimeters (TLDs) were assigned to individuals, and exchanged quarterly, when work

was in progress. From January-June 2011, the licensee temporarily discontinued the use of TLDs as no work activities were in progress. When decommissioning work in Pond 2 began during June 2011, the licensee initiated the use of TLDs again. Since June 2011, all TLD results have been below the detection limit of 5 millirems.

The bioassay requirements are specified in License Conditions 9.4, 42, and 43. The licensee assigned internal exposures based on bioassay sample results. All contractors are required to have urine bioassays prior to performing work and upon termination of licensee work. Routine bioassay samples were collected weekly and were analyzed by an outside laboratory. During September 2011, one bioassay exceeded the action level of 15 micrograms of uranium per liter of urine ($\mu\text{g/l}$). A contract employee working on the miscellaneous digestion building demolition received a bioassay result of 23.1 $\mu\text{g/l}$. Two supplemental samples were collected 7 and 14 days following the initial bioassay. The contract employee's bioassay results were 2.72 and 1.04 $\mu\text{g/l}$, respectively. The licensee determined that the intake of uranium for this contract employee totaled 1.7 milligrams. This intake was below the limit of 10 milligrams of uranium in one week as specified in 10 CFR 20.1201(e).

License Condition 42 requires the licensee to consider corrective actions if an employee's bioassay exceeds 15 $\mu\text{g/l}$. The inspectors reviewed the licensee's follow up actions taken in response to the uranium intake incident and found them to be acceptable. Also, License Condition 43 requires notification to the NRC of corrective actions for any two consecutive urine specimens exceeding 35 $\mu\text{g/l}$ or 130 $\mu\text{g/l}$ for any one specimen. The inspectors confirmed that the uranium intake event was not reportable to the NRC because the sample results did not meet the threshold for reporting.

To complement the bioassay program, the licensee monitored internal exposures using lapel air samplers. The licensee measured the derived air concentration-hours (DAC-hours) to which individuals were exposed. During September 2011, three contract employees' lapel sampler results were greater than the action limits of 1 DAC-hour per day or 12 DAC-hours per week. For these three workers, five sample results exceeded the weekly action limits. The highest sample result was 36.17 DAC-hours. Each exceedance involved worker exposure to airborne contamination resulting from demolition of the miscellaneous digestion building. The licensee stated that the misting machine used to control airborne dust did not perform as expected. The licensee placed two of the contract employees on work restrictions and enhanced dust control procedures. The inspectors reviewed the air sampling results and noted that no worker exceeded the NRC's 2000 DAC-hour annual limit.

c. Surveys

The inspectors reviewed the radiological surveys performed during active decommissioning. One radiation safety officer and six health physics technicians were used to provide oversight of decommissioning and to perform routine tasks. Prior to removal of equipment, demolition of buildings, or when working in areas that have been vacant for long periods, the licensee performed characterization surveys to determine the extent of contamination. The licensee performed surveys for removable alpha and beta contamination and for total (fixed and removable) contamination levels. The results of these surveys determined what type of radiologic controls were needed prior to commencement of work. These work controls were then incorporated into the HWP.

The licensee included pictures of the items being surveyed in the records. In addition, the licensee used washable clothing for on-site work. Two workers were assigned to wash the clothing, and the health physics staff performed radiological surveys after washing. The licensee performed beta and gamma surveys on the clothing prior to use. The NRC inspectors determined that the licensee was conducting surveys in accordance with license requirements.

d. Training

The inspectors reviewed the training that was provided to contract workers involved in decommissioning activities. Prior to active work, each new contract employee received training on radiation and occupational hazards. Employees using respirators had the appropriate medical release, training, and fit test records on file. Training was a continuous process. For example, during the morning meetings prior to work, the workers reviewed hazard controls to be used that day. The inspectors found the training to be adequate for the work being performed.

2.3 Conclusions

The licensee conducted its radiation protection program in accordance with the requirements of 10 CFR Part 20 and the license.

3 Exit Meeting

The inspectors reviewed the scope and findings of the inspection during an exit meeting that was conducted at the conclusion of the onsite inspection on November 2, 2011. A final exit briefing was held by telephone on January 17, 2012. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary.

Supplemental Inspection Information

PARTIAL LIST OF PERSONS CONTACTED

John Ellis, President
Scott Munson, Environmental Manager
Billy Reid, Quality Assurance Manager

INSPECTION PROCEDURES USED

IP 88001	Onsite construction
IP 83822	Radiation protection

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

040-08027/1102-01 VIO Failure of PRC to review changes prior to implementation

Closed

None

Discussed

None

LIST OF ACRONYMS

CFR	<i>Code of Federal Regulations</i>
DAC-hour	derived air concentration-hour
DUF ₄	depleted uranium tetrafluoride
HWP	Hazardous Work Permit
IP	NRC Inspection Procedure
µg/l	micrograms of uranium per liter of urine
PRC	Plant Review Committee
TLD	thermoluminescent dosimeter
URI	unresolved item