

August 21, 2008

MEMORANDUM TO: Michael T. Lesar, Chief  
Rules and Directives Branch  
Division of Administrative Services  
Office of Administration

FROM: Peter J. Habighorst, Chief **/RA/**  
Fuel Manufacturing Branch  
Fuel Facility Licensing Directorate  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

SUBJECT: NOTICE OF AVAILABILITY OF ENVIRONMENTAL ASSESSMENT AND  
FINDING OF NO SIGNIFICANT IMPACT FOR PROPOSED LICENSE  
AMENDMENT AUTHORIZING THE PROCESSING OF URANIUM  
HEXAFLUORIDE IN A NEW PROCESS LINE AT NUCLEAR FUEL  
SERVICES, ERWIN, TENNESSEE

Enclosed, please find one signed original, four copies, and an electronic version on a 3.5-inch diskette of the subject *Federal Register* Notice for transmittal to the Office of the Federal Register for publication.

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CONTACT: Kevin M. Ramsey, FCSS/NMSS  
(301) 492-3123

Docket No.: 70-143  
License No.: SNM-124

Enclosures:

1. One original and four copies
2. One 3.5-inch diskette (electronic version)

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**NUCLEAR REGULATORY COMMISSION**

**DOCKET NO. 70-143**

**NUCLEAR FUEL SERVICES, INC.,  
ENVIRONMENTAL ASSESSMENT AND FINDING OF  
NO SIGNIFICANT IMPACT RELATED TO  
PROPOSED LICENSE AMENDMENT AUTHORIZING  
THE PROCESSING OF URANIUM HEXAFLUORIDE  
IN A NEW PROCESS LINE**

**AGENCY:** Nuclear Regulatory Commission

**ACTION:** Environmental assessment and finding of no significant impact

**FOR FURTHER INFORMATION CONTACT:** Kevin M. Ramsey, Fuel Manufacturing Branch,  
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U.S. Nuclear Regulatory Commission, Mail Stop E-2C40M, Washington, D.C. 20555-0001,  
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Enclosure

## **SUPPLEMENTARY INFORMATION:**

### **I. Introduction:**

The Nuclear Regulatory Commission (NRC) staff is considering the issuance of a license amendment to Materials License SNM-124, issued to Nuclear Fuel Services, Inc. (the licensee), to authorize the processing of uranium hexafluoride (UF<sub>6</sub>) in a new processing line (the CD Line). The NRC has prepared an Environmental Assessment (EA) in support of this proposed action. Based upon the EA, the NRC has concluded that a Finding of No Significant Impact (FONSI) is appropriate and, therefore, an Environmental Impact Statement (EIS) will not be prepared.

### **II. Environmental Assessment:**

#### *Background*

The Nuclear Fuel Services (NFS) facility in Erwin, Tennessee is authorized under License SNM-124 to manufacture high-enriched nuclear reactor fuel. In addition, NFS is authorized to blend HEU with natural uranium and manufacture low-enriched nuclear reactor fuel. License SNM-124 already authorizes NFS to conduct operations with uranium in the form of UF<sub>6</sub>. On August 31, 2007, NFS requested a license amendment to process UF<sub>6</sub> in the CD Line. A redacted version of the request was submitted on October 31, 2007 (Ref. 5). In response to a request for additional information (RAI), NFS submitted a reply to RAI questions on June 19, 2008. A redacted version of the reply was submitted on June 25, 2008 (Ref. 6).

### *Review Scope*

The purpose of this EA is to assess the environmental impacts of the proposed action. The safety aspects of the proposed action are being evaluated separately and this EA does not approve the request. This EA is limited to the proposed operation of the CD Line and any cumulative impacts would have on existing plant operations. The existing conditions and operations for the Erwin facility were evaluated by the NRC for environmental impacts in a 1999 EA related to the renewal of the NFS license (Ref. 1) and a 2002 EA related to the first amendment for the Blended Low-Enriched Uranium (BLEU) Project (Ref. 2). The 2002 EA assessed the impact of the entire BLEU Project using information available at that time. A 2003 EA (Ref. 3) and a 2004 EA (Ref. 4) related to additional BLEU Project amendments, confirmed the FONSI issued in 2002. This assessment presents information and analysis for determining that issuance of a FONSI is appropriate, and that preparation of an EIS is not warranted.

### *Proposed Action*

The proposed action is to amend NRC Materials License SNM-124 to authorize the processing of UF<sub>6</sub> in the new CD Line (Ref. 5). The CD Line will be assembled and operated in an existing building. No construction of new buildings is requested.

### *Need for Proposed Action*

The proposed action is being requested because the production of high-enriched uranium (HEU) at the Portsmouth Gaseous Diffusion Plant was stopped in 1991 and the uranium being used there was placed in storage. The stored uranium included numerous sample bottles of high-enriched uranium in the form of UF<sub>6</sub>. Long-term storage of uranium in the form of UF<sub>6</sub> is undesirable because it is a reactive chemical that can form hydrofluoric acid (HF) if exposed to air. HF is extremely hazardous. In 1999, NFS was subcontracted to receive and store these sample bottles. Similar materials from other U.S. Department of Energy (DOE) sites were

included in the scope of the contract. The proposed action is for NFS to convert the uranium fluoride compounds into more stable compounds (oxides or nitrates). The new high-enriched compounds will either be returned to DOE, or declared surplus and transferred to NFS for down-blending and use as commercial reactor fuel.

### *Alternatives*

The alternatives evaluated are:

1. Approve the license amendment as described; or
2. No action (i.e., deny the request).

### *Affected Environment*

The affected environment is the NFS site, and is identical to the affected environment assessed in the 2002 EA related to the first amendment for the BLEU Project (Ref. 2). A full description of the site and its characteristics is given in the 2002 EA. Additional information can be found in the 1999 EA related to the renewal of the NFS license (Ref. 1). The NFS facility is located in Unicoi County, Tennessee, about 32 km (20 mi) southwest of Johnson City, Tennessee. The plant is about 0.8 km (0.5 mi) southwest of the Erwin city limits. The site occupies about 28 hectares (70 acres). The site is bounded to the northwest by the CSX Corporation (CSX) railroad property and the Nolichucky River, and by Martin Creek to the northeast. The plant elevation is about 9 m (30 ft) above the nearest point on the Nolichucky River.

The area adjacent to the site consists primarily of residential, industrial, and commercial areas, with a limited amount of farming to the northwest. Privately owned residences are located to the east and south of the facility. Tract size is relatively large, leading to a low housing density in the areas adjacent to the facility. The CSX railroad right-of-way is parallel to the western boundary of the site. Industrial development is located adjacent to the railroad on the opposite side of the

right-of-way. The site is bounded by Martin Creek to the north, with privately owned, vacant property and low-density residences.

### *Effluent Releases and Monitoring*

A full description of the effluent monitoring program at the site is provided in a 2002 EA related to the first amendment for the BLEU Project (Ref. 2). Additional information is available in the 1999 EA related to the renewal of the NFS license (Ref. 1). The NFS Erwin Plant conducts effluent and environmental monitoring programs to evaluate potential public health impacts and comply with the NRC effluent and environmental monitoring requirements. The effluent program monitors the airborne, liquid, and solid waste streams produced during operation of the NFS Plant. The environmental program monitors the air, surface water, sediment, soil, groundwater, and vegetation in and around the NFS Plant.

Airborne, liquid, and solid effluent streams that contain radioactive material are generated at the NFS Plant and monitored to ensure compliance with NRC regulations in Title 10 of the *Code of Federal Regulations* (10 CFR), Part 20. Each effluent is monitored at or just before the point of release. The results of effluent monitoring are reported on a semi-annual basis to the NRC in accordance with 10 CFR 70.59.

Airborne and liquid effluents are also monitored for non-radiological constituents in accordance with State discharge permits. For the purpose of this EA, the State of Tennessee is expected to set limits on effluents under its regulatory control that are protective of health and safety and the local environment.

## *Impacts of Proposed Action*

### *1. Normal Operations*

The proposed action is limited to the processing of uranium fluoride compounds in the new CD Line. The new processing line is being assembled in an existing building. No construction of new buildings is proposed. The process will remove uranium fluoride compounds from sample bottles and convert the compounds into either uranium oxide or uranyl nitrate. The processes are small scale and will be conducted inside glove boxes. The glove boxes are designed to contain any leakage of chemicals from the process equipment. Based on the information provided by NFS, the safety controls to be employed for the proposed action appear to be sufficient to ensure that planned operations will have no significant impact on the environment.

Radiological Impacts: The proposed action involves the conversion of uranium fluoride compounds into either uranium oxide or uranyl nitrate. The uranium fluoride compounds are volatile and will be heated to a gaseous state for removal from the sample bottles and processing. A new high-efficiency gaseous effluent treatment system is being installed with the new processing line. The combination of processing small quantities and a new effluent treatment system is expected to result in a very small contribution to the airborne effluents from all plant operations. No significant increase is expected in effluent air emissions discharged through stacks at the site. In addition, no increase is expected in liquid effluents discharged to the sanitary sewer. Therefore, the proposed action will have no impact on the total annual dose estimate for the maximally exposed individual from all planned effluents. The dose to workers may increase slightly from operation of the new processing line. However, occupational dose is monitored and controlled in accordance with applicable NRC regulations; therefore, no adverse impacts are expected. Surface water quality at the NFS site is currently protected by enforcing release limits and monitoring programs. No change in surface water impacts is expected. The

proposed action will not discharge any effluents to the groundwater; therefore, no adverse impacts to groundwater are expected.

The proposed action involves transportation of processed radioactive material from the NFS site to DOE facilities and transportation of waste material from the NFS site. All transportation will be conducted in accordance with the applicable NRC and U.S. Department of Transportation regulations; therefore, no adverse impacts from transportation activities are expected.

Land Use: The proposed action involves operations in existing facilities. No new facilities will be constructed; therefore, no adverse impact to land use is expected.

Cultural Resources: The proposed action involves operations in existing facilities. The NRC staff considers this a type of activity that does not have the potential to affect historic properties. No adverse impact to cultural resources is expected.

Biotic Resources: The proposed action will not change current land use or cause a significant increase in effluents at the site. Therefore, the NRC finds the proposed action will not affect any Federally endangered or threatened species.

## *2. Potential Accidents*

The proposed action will result in a new processing line with new accident sequences. NFS conducted an Integrated Safety Analysis (ISA) of the new processing line and submitted an ISA Summary for NRC review and approval. The ISA Summary identifies all potential accidents that have significant consequences and the safety controls designated by NFS to prevent or mitigate those consequences. The following types of accidents were identified:

- Criticality accidents - Enriched uranium accumulating in critical mass quantities under conditions favorable to an uncontrolled chain reaction.
- Chemical accidents - Hydrofluoric acid spills and releases of argon, carbon dioxide and nitrogen.
- Radiological accidents - Exposure and intake of uranium compounds.
- Fire accidents - Ignition of combustible material in and around the processing line.
- Environmental accidents - Spill of hydrofluoric acid.

All environmental accident scenarios were found to have low consequences. This can be attributed to the relatively small quantities of material being processed and the containment of all processes in glove boxes. Intermediate and high consequences to workers are possible and NFS has designated items relied on for safety to make those accidents unlikely.

### *3. Cumulative Impacts*

NRC has considered the impacts of the proposed action together with the known impacts of the existing facility. After reviewing the information provided, the NRC concludes that the cumulative impacts represent an insignificant change to the existing conditions in the area surrounding the NFS site.

### *Impacts of No Action Alternative*

Under the no action alternative, NFS would not be able to process the uranium fluoride compounds for DOE. This would require NFS to ship the sample bottles with the volatile uranium fluoride compounds back to DOE or to another processing facility. The need to convert the compounds to a more stable form suitable for storage or re-use would remain. Failure to fulfill its role in government and commercial programs could cause these customers to select other alternatives that may be less cost effective and incur greater environmental impacts. Because impacts of the no action alternative would likely be the same as, or greater than, the proposed action, the no action alternative is not further considered.

### *Conclusion*

Based on its review, the NRC has concluded that the environmental impacts associated with the proposed action are not significant and, therefore, do not warrant preparation of an EIS. The NRC has determined that the proposed action, approval of the license amendment as described, is the preferred alternative.

### *Agencies and Persons Contacted*

On July 10, 2008, the NRC staff forwarded a draft of this EA to the Deputy Director of the Division of Radiological Health in the Tennessee Department of Environment and Conservation (TDEC). On August 8, 2008, the Deputy Director responded that TDEC had reviewed the draft EA and had no comments (Ref. 7).

The NRC staff has determined that the proposed action will not affect listed species or critical habitat. Therefore, no consultation is required under Section 7 of the Endangered Species Act. Likewise, the NRC staff has determined that the proposed action is not the type of activity that

has the potential to cause effects on historic properties. Therefore, no consultation is required under Section 106 of the National Historic Preservation Act.

### *References*

1. U.S. Nuclear Regulatory Commission, "Environmental Assessment for Renewal of Special Nuclear Material License No. SNM-124," January 1999, ADAMS No. ML031150418.
2. U.S. Nuclear Regulatory Commission, "Environmental Assessment for Proposed License Amendments to Special Nuclear Material License No. SNM-124 Regarding Downblending and Oxide Conversion of Surplus High-Enriched Uranium," June 2002, ADAMS No. ML021790068.
3. U.S. Nuclear Regulatory Commission, "Environmental Assessment and Finding of No Significant Impact for the BLEU Preparation Facility," September 2003, ADAMS No. ML032390428.
4. U.S. Nuclear Regulatory Commission, "Environmental Assessment and Finding of No Significant Impact for the Oxide Conversion Building and the Effluent Processing Building at the BLEU Complex," June 2004, ADAMS No. ML041470176.
5. Nuclear Fuel Services, "Redacted Version of Amendment Request for Processing UF6 in the CD Line Facility at the NFS Site," October 31, 2007, ADAMS no. ML073090651.
6. Nuclear Fuel Services, "Redacted Version of Reply to RAI Concerning NFS' CD Line Facility," June 25, 2008, ADAMS no. ML081790147.
7. Tennessee Division of Radiological Health, "Consultation with Tennessee re: Environmental Assessment for Nuclear Fuel Services CD Line," August 8, 2008, ADAMS no. ML082240610.

### **III. Finding of No Significant Impact:**

Pursuant to 10 CFR Part 51, the NRC staff has considered the environmental consequences of taking the proposed action. On the basis of this assessment, the Commission has concluded that environmental impacts associated with the proposed action would not be significant, and the Commission is making a finding of no significant impact. Accordingly, the preparation of an EIS is not warranted.

### **IV. Further Information**

Documents related to this action, including the application for amendment and supporting documentation, are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this site, you can access the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. The ADAMS accession numbers for the documents related to this notice are provided in the references above. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737 or by email to [pdr@nrc.gov](mailto:pdr@nrc.gov).

These documents may also be viewed electronically on the public computers located at the NRC's Public Document Room (PDR), O 1 F21, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852. The PDR reproduction contractor will copy documents for a fee.

Dated at Rockville, Maryland this 15th day of August 2008.

For the Nuclear Regulatory Commission.

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