

[REDACTED]

July 17, 2006

Ms. B. Marie Moore, Vice President
Safety and Regulatory
Nuclear Fuel Services, Inc.
P.O. Box 337, MS 123
Erwin, TN 37650

SUBJECT: NUCLEAR FUEL SERVICES, INC. - AMENDMENT 73 - EXEMPTION OF LOW-LEVEL WASTE SHIPMENTS FROM CERTAIN PHYSICAL SECURITY REQUIREMENTS (TAC L31900)

Dear Ms. Moore:

In accordance with your application dated June 20, 2005, and supplements dated December 16, 2005, and March 24, 2006, and pursuant to Parts 70 and 73 to Title 10 of the Code of Federal Regulations (CFR), Materials License SNM-124 is hereby amended to grant an exemption from certain physical security requirements when special nuclear material (SNM) is shipped as a contaminant in low-level waste. Accordingly, Safety Condition S-1 has been revised to include the dates of your submittals and a new Transportation Condition TR-1.2 has been added to read as follows:

- TR-1.2 Notwithstanding the requirements of 10 CFR 73.24(b), 73.25, 73.26, 73.27, 73.67(e), and 73.72, the licensee may ship SNM up to and exceeding a formula quantity using physical protection measures for SNM of Low Strategic Significance under 10 CFR 73.67(g) when the following conditions are satisfied. This condition is limited to material in transit. Fixed site security requirements remain unchanged.
- (a) The shipment contains SNM only as a contaminant in low-level waste.
 - (b) The maximum mass of SNM per container is [REDACTED] U-235 for every [REDACTED] of contiguous non-fissile material.
 - (c) The maximum mass of SNM per conveyance is [REDACTED] of U-235, provided all other requirements of 10 CFR Part 71 are met.
 - (d) SNM is essentially uniformly distributed throughout the waste package.
 - (e) The maximum concentration of SNM in the waste, based upon a container average, is [REDACTED] of U-235 per kilogram of waste.
 - (f) The material form is such that recovery of SNM from the waste is estimated to be less than [REDACTED] using very aggressive processing techniques.

In addition, the license has been revised to reflect Revision 1 of the Site Security Training and Qualification Plan. We accepted this revision in our letter dated June 20, 2006 (ML061670280). Accordingly, Safety Condition S-1 has been revised to include the date of December 16, 2005 (ML060110519).

[REDACTED]

[REDACTED]

B. Moore

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All other conditions of this license shall remain the same.

Enclosed are copies of the revised Materials License SNM-124 (Enclosure 1), and the Safeguards Evaluation Report (Enclosure 2).

If you have any questions regarding this matter, please contact Kevin Ramsey of my staff at (301) 415-7887, or via e-mail to kmr@nrc.gov.

This letter and its enclosures contain sensitive, unclassified information, and are therefore deemed Official Use Only. They will not be placed in the Public Document Room nor will they be publicly available in the NRC Agencywide Documents Access and Management System (ADAMS).

Sincerely,

/RA/

Robert C. Pierson, Director
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-143
License No.: SNM-124
Amendment 73

Enclosures:

1. Materials License SNM-124
2. Safeguards Evaluation Report

[REDACTED]

All other conditions of this license shall remain the same.

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If you have any questions regarding this matter, please contact Kevin Ramsey of my staff at (301) 415-7887, or via e-mail to kmr@nrc.gov.

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Robert C. Pierson, Director
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Office of Nuclear Material Safety
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Docket No.: 70-143
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- 1. Materials License SNM-124
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Closes TAC L31900

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DOCKET: 70-143

LICENSEE: Nuclear Fuel Services, Inc.
Erwin, Tennessee

SUBJECT: SAFEGUARDS EVALUATION REPORT: LETTER DATED JUNE 20, 2005,
EXEMPTION OF LOW-LEVEL WASTE SHIPMENTS FROM CERTAIN
PHYSICAL SECURITY REQUIREMENTS

1.0 BACKGROUND

By letter dated June 20, 2005, and supplements dated December 16, 2005, and March 24, 2006, Nuclear Fuel Services, Inc., (NFS) requested an exemption from certain physical security requirements when shipping special nuclear material (SNM) as a contaminant in low-level waste. NFS generates low-level waste that contains SNM which is not readily separable from the waste and is uneconomical for further uranium recovery processing. The waste is packaged into approved shipping containers and meets the concentration limits for disposal at approved burial sites. When waste packages are grouped together for shipment, the total SNM quantity can exceed the definition of SNM of moderate strategic significance and/or a formula quantity. NFS believes the additional security measures required for these larger quantities are inappropriate for SNM-bearing waste.

2.0 DISCUSSION

The following aspects of the exemption request were reviewed:

- waste characterization, SNM content, and challenges of recovery of SNM from waste, and
- transportation security requirements.

2.1 Waste Characterization, SNM content, and Challenges of SNM Recovery

The licensee's response to the staff's request for additional information (letter dated March 24, 2006) states that: a) the maximum mass of SNM per container is [REDACTED] U-235 for every [REDACTED] of contiguous non-fissile material; b) SNM is essentially uniformly distributed throughout the waste package; c) the maximum concentration of SNM in the waste is 2 grams of U-235 per kilogram of waste; and d) for dry active waste, recovery of SNM is estimated at [REDACTED] considering very aggressive preparation prior to solvent extraction.

The licensee estimated the efficiency and effectiveness of SNM recovery using processing technologies and equipment available at NFS. The analysis suggests that [REDACTED] of

[REDACTED]

[REDACTED]

uranium could be recovered from a drum of waste containing [REDACTED] U-235 in [REDACTED] of dry active waste. The recovery process would take approximately [REDACTED] and would require advanced processing equipment and high-purity materials.

The staff determined the information provided by NFS to be sufficient to support the exemption request. The staff noted that the low concentration of SNM in waste and the difficulty of SNM recovery reduce the attractiveness of SNM-bearing waste as a diversion target.

2.2 Transportation Security Requirements

The licensee's response to the staff's request for additional information (letter dated March 24, 2006) states that NFS will transport SNM-bearing waste to meet the security requirements of 10 CFR 73.67(g). The staff found the described approach adequate.

3.0 ENVIRONMENTAL REVIEW

The staff prepared an Environmental Assessment (EA) for this action in accordance with 10 CFR Part 51. The EA concluded that this action would have no significant impact on the environment. On June 1, 2006, a finding of no significant impact was published in the *Federal Register* (71 FR 31223).

4.0 CONCLUSION

Upon review of the exemption request, the staff has determined that exempting shipments of SNM-bearing, low-level waste from regulatory requirements contained in 10 CFR 73.24(b), 73.25, 73.26, 73.27, 73.67(e), and 73.72, and imposing the requirements of 73.67(g) instead continues to provide an effective physical security program. The staff concludes that this approach is acceptable because of the low concentrations of SNM involved and the difficulty of recovering SNM from the waste. Accordingly, approval of the NFS exemption request subject to the following condition is recommended.

Transportation License Condition TR-1.2 of Materials License SNM-124 should be added to read as follows:

TR-1.2 Notwithstanding the requirements of 10 CFR 73.24(b), 73.25, 73.26, 73.27, 73.67(e), and 73.72, the licensee may ship special nuclear material (SNM) up to and exceeding a formula quantity using physical protection measures for SNM of Low Strategic Significance under 10 CFR 73.67(g) when the following conditions are satisfied. This condition is limited to material in transit. Fixed site security requirements remain unchanged.

- (a) The shipment contains SNM only as a contaminant in low-level waste.
- (b) The maximum mass of SNM per container is [REDACTED] U-235 for every [REDACTED] of contiguous non-fissile material.
- (c) The maximum mass of SNM per conveyance is [REDACTED] of U-235, provided all other requirements of 10 CFR Part 71 are met.

- [REDACTED]
- (d) SNM is essentially uniformly distributed throughout the waste package.
 - (e) The maximum concentration of SNM in the waste, based upon a container average, is [REDACTED] of U-235 per kilogram of waste.
 - (f) The material form is such that recovery of SNM from the waste is estimated to be less than [REDACTED] using very aggressive processing techniques.

Region II inspection staff have no objection to this amendment.

PRINCIPAL CONTRIBUTORS

Oleg Bukharin
Philip Brochman
Alan Frazier
Kevin Ramsey