



**Nuclear Fuel Services, Inc.**  
P.O. Box 337, MS 123  
Erwin, TN 37650

(423) 743-9141

E-Mail :<http://www.atnfs.com>

**AIRBORNE EXPRESS**

21G-03-0242  
GOV-01-55-04  
ACF-03-0298

September 3, 2003

Director  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

References: 1) Docket No. 70-143; SNM License 124  
2) Letter from NRC to B.M. Moore, Nuclear Fuel Services, Inc., Blended Low-Enriched Uranium Preparation Facility Request for Additional Information (TAC NO. L31693) dated July 30, 2003  
3) Letter from B.M. Moore to NRC, License Amendment Request for the BLEU Preparation Facility, dated October 11, 2002 (21G-02-0310)  
4) Letter from B.M. Moore to NRC, ISA Summary for the BLEU Preparation Facility Processes, dated October 14, 2002 (21G-02-0317)

**Subject: Response to Request for Additional Information Concerning the BLEU Preparation Facility**

Dear Sir:

Nuclear Fuel Services, Inc. (NFS) hereby responds to the Request for Additional Information (RAI) regarding the BLEU Preparation Facility (Reference 2). The response to Question #40 has not been included in this submittal because additional information is required to provide a complete response. This response will be submitted as soon as possible.

Attachment I to this letter contains proprietary information that should be withheld from public disclosure in accordance with Title 10, Code of Federal Regulations, Part 2.790. A non-proprietary version of the attachment will be submitted by September 15, 2003.

NIMS01

Attachment II to this letter contains revised page changes to SNM-124. The NFS Safety and Safeguards Review Council has reviewed and approved these changes. For your convenience, vertical lines in the right-hand margin of affected license pages denote changes.

If you or your staff have any questions, require additional information, or wish to discuss this, please contact me, or Mr. Rik Droke, Licensing and Compliance Director at (423) 743-1741. Please reference our unique document identification number (21G-03-0242) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.



B. Marie Moore  
Vice President  
Safety and Regulatory

Enclosure  
Attachment

JSK/lsn

cc:  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
Atlanta Federal Center  
61 Forsyth Street, SW  
Suite 23T85  
Atlanta, GA 30303

Mr. William Gloersen  
Project Inspector  
U.S. Nuclear Regulatory Commission  
Region II  
Atlanta Federal Center  
61 Forsyth Street, SW  
Suite 23T85  
Atlanta, GA 30303

Mr. Daniel Rich  
Senior Resident Inspector  
U.S. Nuclear Regulatory Commission

**ENCLOSURE**

**AFFIDAVIT**

I, **B. Marie Moore**, Vice President of Safety & Regulatory at Nuclear Fuel Services, Inc. (NFS), make the following representations that to the best of my knowledge and beliefs:

1. The following document which Nuclear Fuel Services, Inc. (NFS) wishes to have withheld from public disclosure, is:

**Response to Request for Additional Information for the  
Blended Low-Enriched Uranium Preparation Facility License Amendment Request  
Dated October 11, 2002  
Integrated Safety Assessment Summary Dated October 14, 2002  
Nuclear Fuel Services, Inc. 70-143, dated September 3, 2003 (21G-03-0242)**

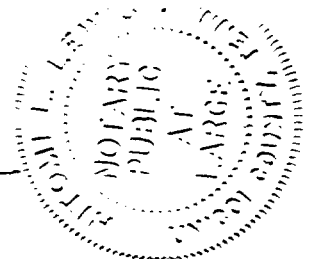
2. The information contained in the document cited in 1 above has been held in confidence by Nuclear Fuel Services, Inc. (NFS) in that it is of a privileged and confidential commercial nature.
3. The information contained in the document cited in 1 above is the intellectual property of Nuclear Fuel Services, Inc. (NFS) and as such is customarily held in confidence by Nuclear Fuel Services, Inc. (NFS) or its contractor. As such, Nuclear Fuel Services, Inc. (NFS) has customarily submitted privileged and confidential information of this type to the Nuclear Regulatory Commission (NRC) and to its predecessor, the Atomic Energy Commission (AEC), in confidence.
4. The information contained in the document cited in 1 above has not been made available to public sources by Nuclear Fuel Services, Inc. (NFS), nor has Nuclear Fuel Services, Inc. (NFS) authorized that it be made available.
5. The public disclosure of the information contained in the document cited in 1 above is likely to cause substantial economic harm to Nuclear Fuel Services, Inc. (NFS).

B. Marie Moore 9/3/03  
B. Marie Moore Date  
Vice President  
Safety & Regulatory

I certify the above named person appeared before me and executed this document on this the 3rd day of September, 2003.

Ditoni & Sears  
Notary Public

My commission expires: 9/29/04



B.M. Moore to Dir., NMSS  
September 3, 2003

21G-03-0242  
GOV-02-55-04  
ACF-03-0298

**Attachment I**

***Response to Request for Additional Information for the  
Blended Low-Enriched Uranium Preparation Facility  
License Amendment Request Dated October 11, 2002  
Integrated Safety Assessment Summary Dated October 14, 2002  
Nuclear Fuel Services, Inc.  
70-143***

**(99 pages to follow)**

**Attachment II**

**Page Changes to SNM-124**

**Part I**

**Page Index**  
**Pages 1 through 5**

**Chapter 2**

**Page 29**  
**Page 30**  
**Page 31**  
**Page 33**  
**Page 34**

**Chapter 3**

**Page 2**

**Chapter 5**

**Page 18**

## SPECIAL NUCLEAR MATERIAL LICENSE

SNM-124

(09/03/03) |

PAGE INDEX (Submitted)

<u>Part</u>	<u>Section</u>	<u>Page(s)</u>	<u>Revision</u>	<u>Date</u>
I	Introduction	i	1	08/15/89
		ii	1	08/15/89
I	Table of Contents	iii	6	08/07/98
		iv	8	04/28/00
		v	8	04/16/03
		vi	8	04/16/03
		vii	6	04/16/03
		vii-a	3	04/16/03
I	List of Figures	viii	9	10/11/02
I	List of Tables	ix	3	04/16/03
I	Chapter 1	1	6	04/28/00
		2	7	04/28/00
		3	9	12/10/99
		4	6	11/24/98
		5	6	11/15/01
		6	13	04/03/02
		7	2	10/15/90
		8	2	05/15/91
		9	1	08/15/89
		10	1	05/15/91
		11	1	05/18/95
		12	2	01/11/01
I	Appendix A	1	1	11/06/98
		2	1	11/06/98
		3	1	11/06/98
		4	1	11/06/98
I	Appendix B (NRC)	1	0	10/06/95
		2	0	10/06/95
		3	0	10/06/95
		4	0	10/06/95
I	Appendix C	1	0	09/25/98
		2	0	09/25/98
		3	0	09/25/98
		4	0	09/25/98
I	Appendix D	1	1	10/11/02
		2	1	10/11/02
		3	1	10/11/02

## SPECIAL NUCLEAR MATERIAL LICENSE

SNM-124

(09/03/03) |

PAGE INDEX (Submitted)

<u>Part</u>	<u>Section</u>	<u>Page(s)</u>	<u>Revision</u>	<u>Date</u>
I	Chapter 2	1	4	09/15/98
		2	4	09/15/98
		3	3	05/15/91
		4	1	08/15/89
		5	1	08/15/89
		6	2	03/13/98
		7	3	03/13/98
		8	2	03/13/98
		9	2	03/13/98
		10	2	10/15/90
		11	1	08/15/89
		12	3	09/15/98
		13	3	03/13/98
		14	2	03/13/98
		15	4	03/13/98
		16	8	07/30/99
		17	5	12/20/00
		18	4	12/20/00
		19	5	10/19/98
		20	5	10/19/98
		21	4	06/18/93
		22	5	07/30/93
		23	3	08/07/92
		24	2	10/15/90
		25	2	10/15/90
		26	2	10/15/90
		27	3	11/16/98
		28	3	01/11/01
		29	1	09/03/03
		30	1	09/03/03
		31	1	09/03/03
		32	0	04/16/03
		33	1	09/03/03
		34	1	09/03/03
		35	0	04/16/03
		36	0	04/16/03
		37	0	04/16/03
		38	0	04/16/03
		39	0	04/16/03
		40	0	04/16/03
		41	0	04/16/03
		42	0	04/16/03
		43	0	04/16/03
		44	0	04/16/03
		45	0	04/16/03
		46	0	04/16/03
I	Chapter 3	1	2	05/15/91
		2	5	09/03/03

## SPECIAL NUCLEAR MATERIAL LICENSE

SNM-124

(09/03/03) |

PAGE INDEX (Submitted)

<u>Part</u>	<u>Section</u>	<u>Page(s)</u>	<u>Revision</u>	<u>Date</u>
I	Chapter 3	3	5	03/13/98
		4	3	05/18/95
		5	6	03/13/98
		6	1	08/15/89
		7	5	03/13/98
		8	3	05/18/95
		9	3	05/18/95
		10	2	05/15/91
		11	4	05/20/92
		12	3	05/18/95
		13	6	01/23/03
		14	4	03/13/98
		15	6	12/10/99
		16	2	05/18/95
		17	3	05/15/91
		18	2	05/19/91
		19	4	12/10/99
		20	7	01/23/03
		21	10	01/23/03
		22	5	04/28/00
		23	5	04/28/00
		24	7	04/28/00
		25	6	03/13/98
I	Chapter 4	1	4	10/23/98
		2	4	10/23/98
		3	3	10/23/98
		4	5	10/23/98
		5	2	10/23/98
		6	4	10/23/98
		7	4	10/23/98
		8	2	10/23/98
		9	2	10/23/98
		10	4	10/23/98
		11	4	10/23/98
		12	4	10/23/98
		13	2	10/23/98
		14	2	10/23/98
		15	3	10/23/98
		16	2	10/23/98
		17	2	10/23/98
		18	4	10/23/98
		19	3	10/23/98
		20	3	10/23/98
		21	3	10/23/98
		22	5	10/23/98
		23	3	10/23/98
		24	2	10/23/98
		25	2	10/23/98



## SPECIAL NUCLEAR MATERIAL LICENSE

SNM-124

(09/03/03) |

PAGE INDEX (Submitted)

<u>Part</u>	<u>Section</u>	<u>Page(s)</u>	<u>Revision</u>	<u>Date</u>
I	Chapter 4	26	2	10/23/98
		27	3	10/23/98
		28	3	10/23/98
		29	5	05/21/99
		30	4	05/21/99
		31	3	10/23/98
		32	5	10/23/98
		33	4	10/23/98
		34	3	10/23/98
		35	4	10/23/98
		36	4	10/23/98
		37	6	04/23/99
		38	6	04/23/99
		39	3	10/23/98
		40	5	04/23/99
		41	2	10/23/98
		42	2	10/23/98
		43	2	10/23/98
		44	5	04/23/99
		45	2	10/23/98
		46	4	10/23/98
		47	4	10/23/98
		48	3	10/23/98
		49	2	10/23/98
		50	2	10/23/98
		51	2	10/23/98
		52	2	10/23/98
		53	4	10/23/98
		54	2	10/23/98
		55	2	10/23/98
		56	2	10/23/98
		57	2	10/23/98
		58	2	10/23/98
		59	2	10/23/98
		60	4	10/23/98
I	Chapter 5	1	3	08/09/00
		2	6	04/14/03
		3	3	08/28/98
		4	3	08/28/98
		5	2	08/28/98
		6	3	10/11/02
		7	4	10/11/02
		8	8	04/14/03
		9	5	10/11/02
		10	6	08/18/00
		11	3	08/28/98
		12	2	08/28/98
		13	2	08/28/98
		14	3	08/28/98

## SPECIAL NUCLEAR MATERIAL LICENSE

SNM-124

(09/03/03) |

PAGE INDEX (Submitted)

<u>Part</u>	<u>Section</u>	<u>Page(s)</u>	<u>Revision</u>	<u>Date</u>
I	Chapter 5	15	3	08/28/98
		16	2	08/28/98
		17	3	08/28/98
		18	8	09/03/03
		19	5	08/28/98
		20	2	08/28/98
		21	2	08/28/98
		22	2	08/28/98
		23	0	08/28/98
I	Chapter 6	1	2	08/14/98
		2	3	11/13/98
		3	7	05/21/99
		4	7	09/04/98
		5	3	02/14/03
		6	3	10/11/02
		7	1	08/14/01
		8	1	10/11/02
		9	2	08/14/98
		10	1	11/29/94
I	Chapter 7	1	8	11/16/98
		2	5	10/08/93
		3	4	10/08/93
		4	2	11/16/98
		5	2	11/16/98
		6	2	11/16/98
I	Chapter 7 Appendix A	deleted		
I	Chapter 7 Appendix B	deleted		
I	Chapter 8	1	2	08/28/98

## **2.12 Management Measures for Items Relied On For Safety**

Management Measures, as described in Section 2.12, shall be implemented for Items Relied On For Safety (IROFS) upon approval of an ISA Summary which is required to be contained in a license application (or amendment application), as specified under 10 CFR 70.65(b). Additionally, the requirements described in Section 2.12 shall apply to IROFS upon approval of an ISA Summary submitted to fulfill the requirements of 10 CFR 70.62(c)(3)(ii). Management Measures are applied to IROFS to ensure the IROFS are available and reliable to perform their required function when needed, as specified in 10 CFR 70.62(d).

Management measures are defined (10 CFR 70.4) as functions performed, generally on a continuing basis, that are applied to IROFS, to ensure they are available and reliable to perform their functions when needed. Management measures shall include the following elements:

- Configuration Management,
- Maintenance,
- Training and Qualifications,
- Procedures,
- Audits and Assessments,
- Incident Investigations,
- Records Management, and
- Other Quality Assurance Elements.

The type of IROFS control, along with the risk reduction level credited to the IROFS in the ISA Summary, will determine the level of management measures applied to each IROFS. The four types of IROFS controls are Active Engineered, Passive Engineered, Administrative, and Enhanced Administrative. The management measures appropriate for each type of control are shown in Table 2.2. The management measures applied to a particular IROFS may be graded commensurate with the level of risk reduction credited for that IROFS in the ISA Summary. High or Intermediate consequence events depend on IROFS to reduce the overall risk to an acceptable level. High consequence events must be justified as highly unlikely, and intermediate consequence events justified as unlikely, after implementation of credited IROFS. Table 2.2 identifies how management measures are applied in a graded approach based on risk reduction levels (Level A or B) credited in the ISA Summary. IROFS credited with a high level (those corresponding to "High" and/or "Intermediate" consequence accident sequences (Level A)) of risk reduction will require application of more management measures to ensure a high level of reliability. IROFS credited with a moderate level (those corresponding to "Intermediate" consequence accident sequences (Level B)) of risk reduction, or intermediate failure likelihood, may have a reduced level of management measures applied.

The applicable management measures identified in Table 2.2 are applied based on the type of control to ensure that the credited IROFS failure index meets the risk index specified or the design-based thresholds for events associated with natural phenomena. Information to justify a

deviation from a management measure contained in Table 2.2 associated with a specific IROFS shall be documented by the ISA team.

## **2.12.1 Configuration Management**

### **2.12.1.1 Configuration Management Policy**

NFS maintains a configuration management program for IROFS in a manner consistent with Chapter 11 of NUREG-1520 (issued March 2002). The scope of the IROFS that are under configuration management, and management measures that shall be applied to maintain these safety controls reliable, are contained in Table 2.2. In addition, each IROFS and its associated management measures is specified in the ISA Summary in accordance with 10 CFR 70.62.

The design process shall rely on information supplied from a multi-disciplined team of engineers and safety personnel. This design process is initiated with a project definition wherein the baseline and safety design criteria are established and concludes with a detailed design wherein the safety criteria are incorporated. Information provided by the multi-disciplined team shall be used, as appropriate, to establish and implement the following configuration management functions for facilities to ensure a baseline design meets the requirements specified in 10 CFR 70.64:

- Design Requirements,
- Document Control,
- Change Control, and
- Assessments.

Changes to IROFS are managed and controlled as described in written procedures developed in conformance with guidance specified in NUREG-1520. IROFS are identified in the ISA Summary, a controlled document.

### **2.12.1.2 Design Requirements**

NFS has documents establishing requirements for design of facilities where Special Nuclear Material is handled. Designs based on these requirements are reviewed in a graded manner through the NFS Internally Authorized Change (IAC) process and the NFS Integrated Safety Analysis (ISA) process.

The design bases are established in accordance with procedures to meet regulatory requirements and to ensure that process operations perform the desired function in accordance with requirements from individual safety functions. These design bases are developed by a multi-disciplined team comprised of engineering and safety personnel and

are approved by the safety discipline manager (See Section 2.2.3). Procedures used to establish design bases shall incorporate engineering, maintenance, and safety review interfaces used in support of the IAC and ISA processes. Through the IAC process, written approval of the recommended design bases shall be required from the safety review committee before startup of operations is permissible.

#### **2.12.1.3 Document Control**

In accordance with procedures, a document control system shall be established for facilities to create, control and track documents within the configuration management function. The document control system shall maintain control of procedures that are IROFS and those procedures related to training, quality assurance, maintenance, audits and assessments, emergency operations, emergency response, and change control documents associated with IROFS.

Other documents that shall be maintained under the document control system when relied on for safety include:

- Design Requirements,
- Engineering drawings and/or sketches, and
- Specifications for IROFS; and
- The ISA Summary

The document control system will address cataloging the document databases, the informational content of the document databases, means to maintain and distribute documents, and document retention/retrieval policies. The document databases are used to control documents and track the document change status.

Documents are controlled in accordance with procedures developed by the appropriate functional disciplines (i.e., departments) until such time that the documents are transferred to Records Management for retention.

Additional information concerning the document databases and records management system that shall be used to capture documents that are relevant and relied on for safety is provided in Section 2.12.7 "Records Management".

#### **2.12.1.6 Design Reconstitution (Existing Facilities Only)**

NFS shall have a program and supporting documents for establishing design requirements for existing facilities where Special Nuclear Material is handled that is comparable to those described in Section 2.12.1.2.

### **2.12.2 Maintenance of IROFS**

#### **2.12.2.1 Maintenance of Active and Passive Engineered Controls**

NFS has established a program to ensure that Active and Passive Engineered Controls designated as IROFS are maintained in a manner so as to ensure the IROFS are capable of performing their intended function when called upon. An essential element of the maintenance program requires that all maintenance activities, including functional testing of IROFS during startup of process operations, are authorized by written procedures and/or written instructions.

The maintenance program consists of several key program elements including a maintenance management system that provides the scheduling and documentation of the following maintenance elements when applied to IROFS:

- Surveillance and Monitoring,
- Corrective Maintenance,
- Preventive Maintenance, and
- Functional Testing.

Maintenance activities will be performed on IROFS in a manner to minimize the recurrence of unacceptable performance deficiencies. Maintenance, preventive maintenance, calibration, testing, and surveillance/monitoring of IROFS, to ensure continued reliability and functional acceptability of IROFS, will be authorized in accordance with written procedures and at frequencies approved by the safety review committee. These frequencies will be established based on manufacturer and industry guidance, risk assessment, feedback from surveillance and maintenance activities, or recommendations from NFS' corrective action program (See Section 2.12.6 "Incident Investigations and Corrective Actions").

Corrective maintenance shall be performed in a planned, systematic, integrated and controlled approach for the repair and replacement activities associated with identified unacceptable performance deficiencies of IROFS. Functional testing of the IROFS shall be performed to provide reasonable assurance that the safety control performs as designated and provides the safety action expected.

Preventive maintenance shall be performed in a preplanned and scheduled manner to refurbish or overhaul IROFS to ensure that they perform their intended function. Functional testing of the IROFS shall be performed to provide reasonable assurance that the safety control performs as designated and provides the safety action expected. Preventive maintenance will be appropriately balanced against the objective of

minimizing unavailability of IROFS. A schedule for performing preventive maintenance on IROFS is maintained as specified in written procedures.

Functional testing of IROFS shall be performed prior to startup of facilities or process operations involving IROFS to provide reasonable assurance that the safety control performs as designated. Functional testing of IROFS shall be performed, prior to restart, if the process operation has been inactive for more than 120 days. During process operations, compensatory measures will be used as appropriate while functional testing is performed on IROFS. The results of functional testing shall be documented and maintained as specified in Section 2.12.7 "Records Management".

The maintenance system also provides instructions for specifying and documenting maintenance work activities and approvals. Maintenance skills training for mechanics involved in maintenance activities regarding IROFS is also required. Maintenance skills' training is addressed in Section 2.12.3 "Training & Qualifications". Contractors that perform work on IROFS will meet the same guidelines for IROFS training or will be under direct supervision by NFS-trained personnel that are qualified for the particular IROFS and knowledgeable of that IROFS.

Records for failures of IROFS shall be maintained in accordance with 10 CFR 70.62(a)(3). Maintenance records shall be maintained in accordance with written procedures as specified in Section 2.12.7 "Records Management".

#### **2.12.2.2 Maintenance of Administrative Controls**

NFS ensures that Administrative and Enhanced Administrative Controls designated as IROFS are functional and reliable over extended periods of operation by applying the Management Measures described throughout this section and in Table 2.2 "Management Measures for IROFS".

#### **2.12.2.3 Maintenance Information Contained in Written Procedures**

The following methods/practices, as applicable, are incorporated into programs, systems or written procedures regarding maintenance of IROFS:

- Authorized maintenance instructions with identification of the IROFS;
- Parts list for IROFS;
- As-built or red-lined drawings;
- Pre-maintenance review of work to be performed on unique and complex IROFS including procedure reviews to ensure accuracy and completeness;

radiation exposures, the spread of contamination to the extent practical, contamination of facilities in support of eventual decommissioning, the generation of radioactive wastes, and the release of radioactivity to unrestricted areas. Each discipline manager shall be responsible for assuring that appropriate radiation protection controls are incorporated into all activities under his supervision. Each person working within a restricted area shall accept the responsibility for maintaining his/her exposure ALARA by complying with approved procedures.

- Modifications or changes to the Erwin Plant shall be designed and constructed giving full consideration to the ALARA concept. These modifications and changes to the Erwin Plant shall incorporate the ALARA concepts specified in 10 CFR 20.1406.

NFS' management is committed to and will make appropriate assignments to implement an ALARA program.

An ALARA Report will be issued to the NFS President and management semi-annually, reviewing employee exposure and effluent release data to:

- Determine if there are any upward trends developing in personnel exposures for identifiable categories of workers or types of operations or effluent releases.
- Determine if exposures and effluents might be lowered under the concept of as low as reasonably achievable.
- Determine if equipment for effluent and exposure control is being properly used, maintained, and inspected.
- Review other required audits and inspections performed during the period of the report.
- Review of the data from employee exposures, bioassay results, effluent releases, in-plant airborne radioactivity, and environmental monitoring.
- Report the weekly averages of airborne concentrations of radioactivity at work stations and areas.



### 5.2.7 Ground Water Monitoring

NFS will monitor groundwater to determine if the quality has been impacted downgradient of the NFS plant site.

Groundwater flow at the NFS site is to the north-northwest. Figure 5.2 depicts the water table surface for March 1998 and is representative of overall groundwater flow. To determine the impact of NFS operations on downgradient groundwater quality, one upgradient well (52) and ten downgradient wells (98A, 99A, 100A, 100B, 101A, 102A, 103A, 104A, 105A, 106A) will be monitored quarterly at a minimum for gross alpha and gross beta activity.

All groundwater analytical results will be reviewed and evaluated. If the gross alpha activity in a well exceeds 15 pCi/L, then at a minimum, isotopic analysis for uranium will be performed. For wells which exceed 15 pCi/L gross alpha, isotopic plutonium and/or isotopic thorium analysis will be performed when the well contains these contaminants at levels significantly greater than background, or if potential contamination in the area indicates isotopic plutonium and/or thorium analysis should be conducted. Wells which routinely exceed 15 pCi/L gross alpha and have no history for plutonium or thorium contamination will be sampled annually for plutonium and thorium to confirm their continued absence. If gross beta activity in any well exceeds 50 pCi/L then analysis for Tc-99 will be performed.

Monitoring well locations for the minimum program are depicted in Figure 5.3. Table 5-1 provides information on the sample type, collection frequency, analysis, action level and minimum detectable concentration.