



Nuclear Fuel Services, Inc.  
1205 Banner Hill Road  
Erwin, TN 37650

(423) 743-9141

**21G-07-0107**  
**GOV-01-55-04**  
**ACF-07-0254**

August 22, 2007

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 B.M. Moore to NMSS NRC, Amendment Request to Increase the  $^{235}\text{U}$  Possession Limit for the NFS Site, dated May 15, 2007 (21G-07-0043/TAC L32637)

**Subject: Submittal of Redacted Version of Amendment Request to Increase the  $^{235}\text{U}$  Possession Limit for the NFS Site**


Dear Sir:

Per a request from your staff, Nuclear Fuel Services, Inc. (NFS) hereby submits a redacted version of the request to amend the referenced license to increase the authorized possession limit for  $^{235}\text{U}$  (Attachment 1).

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-07-0107) in any correspondence concerning this letter.

Sincerely,

**NUCLEAR FUEL SERVICES, INC.**

  
for B. Marie Moore  
Vice President  
Safety and Regulatory



JKW/pdj  
Attachment

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

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

Mr. Steve Burris  
U.S. Nuclear Regulatory Commission  
Senior Resident Inspector



**ATTACHMENT 1**

**Redacted Version of Amendment Request to Increase the  $^{235}\text{U}$  Possession Limit for  
the NFS Site**



[REDACTED]

21G-07-0043  
GOV-01-55-04  
ACF-07-0099

May 15, 2007

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 T.S. Baer to NRC, Applicant's Environmental Report for Renewal of Special Nuclear Materials License No. SNM-124, May 2, 1997 (21G-97-0059)
  - 3) Letter from B.M. Moore to NRC, Supplemental Environmental Report for Licensing Actions to Support the BLEU Project, dated November 9, 2001 (21G-01-0261)

**Subject: Amendment Request to Increase the  $^{235}\text{U}$  Possession Limit for the NFS Site**

Dear Sir:

Nuclear Fuel Services, Inc. (NFS) hereby requests an amendment to the referenced license to increase the authorized possession limit [REDACTED]. As discussed with your staff, this proposed increase in the authorized possession limit is needed to utilize all of the existing storage locations, and to better align the number of storage locations with the maximum quantities of  $^{235}\text{U}$  allowed by nuclear criticality safety (NCS) limits. The requested limit is also consistent with the maximum quantity allowed at the other Category I facility, thus, providing an equitable license basis for the competing businesses.

The proposed change to increase the  $^{235}\text{U}$  possession limit necessitates an administrative change to Chapter 1, Section 1.4.1, *Uranium Enriched in  $^{235}\text{U}$  Isotope*, of the referenced license. This proposed change is considered as an administrative/procedural change since it has no effect on any existing facility or processing equipment and will not exceed any of the thresholds specified in 10 CFR 51.22(c)(11). To be specific, NFS' assessment is summarized as follows:

[REDACTED]

[REDACTED]



- There will be no associated new construction or changes to process equipment or facilities;
- There will be no change in the types, or increase in the amounts of radioactive material that may be released off-site as represented in NFS' current Environmental Report;
- There will be no significant increase in individual or cumulative occupational radiation exposures; and
- There will be no significant increase in the potential for or consequences from radiological accidents.

Therefore, this change is commensurate with a *Categorical Exclusion* under the aforesaid standard.

Be further assured that this change is simple and only administrative in nature by the following:

- There will be no new or modified accident sequences in the ISA;
- There will be no changes in the nuclear criticality, industrial, fire, radiation, or environmental safety programs;
- There will be no changes in the emergency preparedness program;
- There will be no changes in process throughput;
- There will be no expansion of process area storage (non-vault storage); and the storage will continue to be subject to, and limited by Process Control Limits (PCLs);
- There will be no changes in the physical security program;
- There will be no changes in the material control & accountability program; and
- The material control & accountability receipt required check weighing will not require modification beyond what is currently authorized.

The Nuclear Regulatory Commission (NRC) may elect, at its discretion, to forego using the regulatory criteria when determining whether or not a *Categorical Exclusion* is appropriate for this licensing action and choose to conduct an environmental assessment as a good regulatory practice. Additional information to support an environmental assessment is contained in Attachment 1.

And finally, each of the storage facilities that will be used for HEU storage have in place financial assurance instruments that have been approved by the NRC as required under Title 10, Code of Federal Regulations (CFR), Part 70.25. As such, no changes to these regulatory programs are necessary to support the subject license amendment request.

The Safety and Safeguards Review Council (SSRC) has reviewed and approved this proposed change (Attachment 2). For your convenience, vertical lines in the margin of affected license pages denote changes.

Information contained herein contains sensitive information, is marked as "Official Use Only," and is not suitable for public release.



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-07-0043) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.



B. Marie Moore  
Vice President  
Safety and Regulatory

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Attachments

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## ATTACHMENT 1

### **Supplemental Information to Support Preparation of an Environmental Assessment for Increasing the $^{235}\text{U}$ Possession Limit for the NFS Site**

#### **Purpose of License Amendment Request: Background Information and Regulatory Impacts to NFS Security and Safeguards Programs**

Approximately one year after the terrorist events of September 11, 2001, the Department of Energy (DOE) requested that NFS make the necessary adjustments that would support possessing an inventory of strategic quantities of special nuclear materials (SSNM) that would allow continuous operations for a period of six to 12 months. The purpose of this request by DOE was to provide a contingency should future shipments of SSNM be interrupted or curtailed in the United States. NFS has since made the required arrangements to its security, safeguards and safety programs that would facilitate accommodating this request.

Over the course of the past several years, NFS began receiving shipments of SSNM from DOE on an accelerated schedule. These shipments typically consist of approximately 500-600 kilograms of SSNM per month. In addition, each shipment typically includes SSNM in various forms that support both the Naval Reactors and Blended Low-Enriched Uranium (BLEU) Programs. Of the 500-600 kilograms of SSNM that NFS has received each month in the past several years, more than one-half of the shipments are allocated to support the Naval Reactors Program with the remainder supporting the BLEU Program.

To support the increased number of shipments that have been received at NFS, programmatic changes to NFS' Physical Protection Plan (PPP) and Highly Enriched Fundamental Nuclear Material Control (FNMC) Plan were necessary. It is important to note that changes to these security and safeguards programs were implemented in 2004 to begin receiving the nuclear materials. In addition, changes to both the security and safeguards programs have been reviewed and approved by the Nuclear Regulatory Commission (NRC) in accordance with either 10 CFR Part 70.32 or §70.34. In fact, many of these site-wide changes were also needed to comply with the Confirmatory Orders issued by NRC.

NFS currently is authorized to store SSNM at one of three locations prior to processing such materials. Nuclear materials stored at any one of these three locations are in accordance with NFS' PPP and FNMC Plan and have been subject to security and safeguards inspections by NRC. NFS is not requesting authorization to store SSNM at any other location at the plant site in conjunction with the request to increase the  $^{235}\text{U}$  possession limit. In addition, NFS does not intend to increase the process area storage (non-vault storage) currently limited by Process Control Limits required under an NRC Confirmatory Order and specified in NFS' PPP. The only types of nuclear materials that have been and will be received are those listed as Category 1A and 1B as specified in NFS' PPP and FNMC Plan.

[REDACTED]



Shipments of SSNM are transported to NFS via Safe & Secure Transport Vehicles. These nuclear materials are subsequently processed for receipt at the Bldg. 306 Shipping & Receiving Vault in accordance with existing requirements specified in NFS' PPP and FNMC Plan. Since any changes needed to accommodate the increased rate of delivery and receipt of SSNM were implemented in 2004, no further changes to NFS' PPP and FNMC Plan are needed at this time to support the request to increase the  $^{235}\text{U}$  possession limit.

The need for increasing the site-wide  $^{235}\text{U}$  possession limit is attributable to a lower than planned processing rate at the BLEU Preparation Facility (BPF), increased shipping rates, and the desire to utilize all existing storage locations. Thus, an increase in the possession limit [REDACTED] is requested.

### **Environmental Impacts Attributable to Increasing the $^{235}\text{U}$ Possession Limit**

In this proposed license amendment request, no changes in the types or increases in the amounts of radioactive materials that may be released off-site as referenced in NFS' current Environmental Report would occur. This statement is based on the fact that only nuclear materials currently processed in support of Naval Reactors and BLEU Programs will be stored at locations currently authorized. Since no changes to processing equipment or facilities are needed to support an increase to the possession limit, there will not be any increase in process throughput. As such, the proposed licensing actions will result in a zero increase in site effluents as stated in the current NFS Environmental Report.

Increasing the NFS possession limit will have no impact on the scenarios currently included in the Integrated Safety Analysis. The ISA evaluations consider all authorized storage areas at their maximum capacity of uranium.

Accident sequences are based on the types of activities being performed in the area and involve a smaller number of containers than the maximum allowed. Loss of radioactive materials from a container package is the most credible postulated accident relevant to the check weigh operations and each of the authorized storage locations. Considering that building dimensions at the check weigh area are substantially less than those of any other authorized storage areas, loss of radioactive materials from the container package results in the highest concentrations of airborne radioactivity. As such, radiological consequences from the most credible postulated accident at the check weigh operation is the bounding case including those postulated for all authorized storage locations.

The maximum quantity of  $^{235}\text{U}$  that could be possessed in authorized storage locations without exceeding the Nuclear Criticality Safety limits is [REDACTED]. Since bounding radiological impacts associated with the check weigh operations are greater than those at any other authorized storage locations, the maximum quantity of nuclear material that can be possessed without impacting the underlying safety basis is [REDACTED].

[REDACTED]



[REDACTED]

Based on health physics evaluations that have been conducted to support the proposed license amendment request, no significant increase in individual or cumulative occupational radiation doses is expected to occur. Since no changes to the existing process equipment and facilities will be incurred, there will be no increase in production throughput and, therefore, no increase in airborne radioactivity. Furthermore, since the material type analyzed is unchanged from those currently handled, existing radiological data are valid for estimating the radiological impacts attributable to the change in possession limit.

The predominate radiological exposure pathway caused by increasing the possession limit will be from direct external radiation to employees responsible for the removal of SSNM at the Shipping and Receiving Vault and placement of the nuclear materials into one of the three designated storage locations. The target population considered in the health physics assessment is comprised of approximately 30 individuals (10 individuals assigned to three shifts per day) working in the Shipping & Receiving Vault out of a total population of 1000 individuals in the monitoring program. Since the source term with respect to material in storage could increase by 30%, the direct radiation exposure could also increase by 30% to this critical group. The typical average Deep Dose Equivalent (DDE) assigned to this critical group is only expected to increase from approximately 25 mrem/year to 33 mrem/y or less<sup>1</sup>. The projected maximum increase in effective dose to this population is only a small fraction of the permissible 5000 mrem/y occupational dose standards specified in 10 CFR 20.1201. Accordingly, the radiological impacts attributable to increasing the <sup>235</sup>U possession limit [REDACTED] are negligible.

No radiological air emissions or liquid effluents will be discharged from any of the facilities used to store SSNM. Furthermore, the storage of additional nuclear materials at these facilities will not cause any significant increase in external dose to members of the public given the materials of construction used for these facilities and the source-to-receptor distances for the nearest member of the public. The dose from the proposed increase in the <sup>235</sup>U possession limit will remain a fraction of the allowable limit specified in 10 CFR 20.1301. As such, no changes to the environmental effluent data cited in NFS' current Environmental Report are needed to support the proposed licensing action.

### **Regulatory Impacts to NFS Safety Programs**

As stated in the proposed license amendment request, an increase in the <sup>235</sup>U possession limit will have no impact on the existing nuclear criticality safety, industrial safety, fire safety, radiation protection, or environmental safety programs. The following information is provided in support of preparing an environmental assessment for this licensing action.

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<sup>1</sup> The dose estimates were based on actual radiological data measured for workers in Calendar Year 2006.

[REDACTED]



- **Nuclear Criticality Safety:** Increasing the NFS possession limit will have no impact on the current NCS program. All activities involving SNM have been reviewed by Nuclear Criticality Safety (NCS) personnel and have been determined to be subcritical under both normal and credible abnormal conditions. NCS has evaluated all storage areas at their maximum capacity of  $^{235}\text{U}$ . If all storage areas were to contain the maximum quantity of  $^{235}\text{U}$  allowed by NCS limits, this would result in greater than [REDACTED] on the NFS plant site. Note that the [REDACTED] includes use of the second floor of Bldg. 311. As such, no changes to Chapter 4 of SNM-124 are needed to support the proposed licensing action.
- **Industrial and Fire Safety:** The proposed license amendment request will not result in causing any changes to NFS' industrial or fire safety programs. [REDACTED] In addition, the fire safety analysis that was performed in support of storing HEU [REDACTED] is also bounding for the safety basis supporting operations at the [REDACTED]. The packaging of additional materials expected from the increased quantities of HEU does not increase the fire loading beyond the capabilities of the fire detection and response capabilities already existing for any of these storage areas.
- **Radiation Protection:** No significant changes to the NFS Health Physics Program are expected as a result of increasing the  $^{235}\text{U}$  possession limit as proposed. NFS does not plan to increase its ALARA Goals to support operations at these storage facilities. As previously stated, a maximum increase from 25 mrem/y to 33 mrem/y may occur to a small target population of 30 individuals out of the 1000 individuals currently in the monitoring program. This increased radiation exposure is negligible considering that the allowable exposure is 5000 mrem/y effective dose for occupational workers, as cited in 10 CFR Part 20.

NFS does not plan to alter its air sampling, contamination control, or dosimetry programs to support the proposed increase in the  $^{235}\text{U}$  possession limit. Therefore, no changes to Chapter 3 of SNM-124 are needed to support the proposed increase in the  $^{235}\text{U}$  possession limit.
- **Environmental Safety:** No changes to the NFS environmental monitoring program are needed to support this proposed licensing action since the aforementioned impacts to the environment are expected to be negligible. Therefore, the existing environmental monitoring program described in Chapter 5 of SNM-124 is adequate to ensure that members of the public are protected.
- **Emergency Preparedness Program:** The NFS emergency preparedness program is already geared to respond to and mitigate any potential hazards that may be encountered [REDACTED]. As such, the proposed licensing action will cause no changes to this program.



**ATTACHMENT 2**

*Page Changes to SNM-124*

Page Index (submitted)

Part I  
**Chapter 1**



[REDACTED]

**SPECIAL NUCLEAR MATERIAL LICENSE**

**SNM-124**

(05/15/2007) |

**PAGE INDEX (Submitted)**

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[REDACTED]

**SPECIAL NUCLEAR MATERIAL LICENSE**  
**SNM-124**  
**CHAPTER 1**

**STANDARD CONDITIONS AND SPECIAL AUTHORIZATIONS**

**1.1 Name, Address, and Corporate Information**

This licensing information document is filed by Nuclear Fuel Services, Inc., (NFS), incorporated in the State of Maryland. NFS' Corporate Offices are located on 1205 Banner Hill Road, Erwin, Tennessee 37650-9718. NFS is a subsidiary of NFS Holdings, Inc., which is a subsidiary of NFS Services, LLC, a limited partnership chartered in the State of Georgia. A detailed listing of NFS affiliates is provided in Appendix D, along with a figure (Figure D-1) showing the reporting relationships.

**1.2 Site Location**

The NFS facilities are located in the city of Erwin, in Unicoi County, Tennessee. At this site, NFS maintains buildings for administrative, laboratory, manufacturing, and support activities. The activities described in Section 1.5 are performed at 1205 Banner Hill Road, 1080 S. Industrial Drive, and 200 Oxide Lane. These locations are in Erwin, Tennessee.

**1.3 License Number and Period of License**

The NFS License number is SNM-124 (Docket 70-143). NFS requests a license renewal for a ten-year period commencing from the time that the Nuclear Regulatory Commission completes final action on this matter. In order to remain current with respect to changes in processes, equipment, and facilities, NFS will submit revisions to Part II (Demonstration of Safety) of this license application every two years during the term of the license.

**1.4 Possession Limits**

The following types, quantities, and forms of special nuclear material (SNM) are authorized:

**1.4.1 Uranium Enriched in the <sup>235</sup>U Isotope**

[REDACTED]



[REDACTED]

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Isotopic content – any, up to maximum enrichment and up to an average of  $10^{-6}$  grams of plutonium per gram of uranium, 0.25 millicuries of fission products per gram of uranium, and  $1.5 \times 10^{-5}$  grams of transuranic materials (including plutonium) per gram of uranium, as contaminants;

Chemical and physical forms – as described in Appendix B to this chapter, excluding pyrophoric forms.

**1.4.2 Uranium Enriched in the  $^{233}\text{U}$  Isotope**

**1.4.2.1**

[REDACTED]

Isotopic content – any, up to maximum enrichment;

Chemical and physical forms – any form, but limited to residual contamination from past operational activities.

**1.4.2.2**

[REDACTED]

Isotopic content – any, up to maximum enrichment;

Chemical and physical forms – any form, as received for analysis and/or for input into development studies.

**1.4.3 Plutonium**

**1.4.3.1 Counting and Calibration Standards**

Maximum quantity on site – 10 millicuries as counting and calibration standards;

**1.4.3.2 Residual Contamination and Mixed Oxide Process Holdup**

Buildings 110 and 234

The possession limits, including quantity, isotopic content and chemical and physical forms, for plutonium residual contamination and mixed oxide holdups for Buildings 110 and 234 were previously described in letters dated October 17, 1988; and January 21, 1994. [REDACTED]



[REDACTED]  
**SPECIAL NUCLEAR MATERIAL LICENSE**  
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[REDACTED]  
[REDACTED]  
**Site-Wide Decommissioning**

NFS is authorized to possess residual plutonium contamination, as-is from former plutonium operations, in in-situ soil and debris, as well as waste and waste holdups that will be generated during NFS plant site decommissioning activities, including Building 234.

**1.4.3.3 Materials Input to R&D Studies**

[REDACTED]  
Chemical and physical forms – any form, except pyrophoric, plutonium received for analysis and/or for input into development studies.

**1.4.3.4 Materials Received for Decontamination and Volume Reduction**

[REDACTED]  
Chemical and physical forms – any form, except pyrophoric, as contamination on equipment and materials received for decontamination and volume reduction.

**1.5 Authorized Activities**

This application requests authorization to receive, possess, use, store, and ship authorized special nuclear material pursuant to 10 CFR Part 70.

**1.5.1 Product Processing Operations**

**1.5.1.1 UF<sub>6</sub> Conversion**

Conversion of highly enriched uranium hexafluoride to other uranium compounds.

**1.5.1.2 Fuel Manufacture**

Production of fuel containing highly enriched uranium.



[REDACTED]

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**1.5.1.3 Scrap Recovery**

Facilities are available for recovery and purification of the following materials from process scrap either internally generated or generated at other facilities:

- low-enriched uranium
- high-enriched uranium

**1.5.1.4 Enrichment Blending and Conversion**

Facilities and equipment are available for the enrichment blending of highly-enriched liquid UNH to produce a low-enriched UNH solution, and conversion of downblended UNH solution to uranium oxide ( $U_xO_x$ ).

**1.5.2 Laboratory Operations**

Laboratories are equipped to perform wet chemical and instrumental analyses and a wide variety of physical tests on material consisting of and/or containing special nuclear materials.

**1.5.3 General Services Operations**

Storage of special nuclear material compounds and mixtures in areas with containers arranged specifically for maintenance of radiological and nuclear safety.

Maintenance and repair of special nuclear materials processing equipment and auxiliary systems.

Decontamination of equipment and materials, including personnel protective clothing and respiratory devices.

**1.5.4 Research and Development Operations**

Research and development work is performed on source and special nuclear material compounds and mixtures in areas with containers arranged specifically for maintenance of radiological and nuclear safety.

**1.5.5 Waste Treatment and Disposal**

Decontamination of materials and equipment. Volume reduction, treatment, packaging and storage of both liquid and solid wastes contaminated with or containing nonrecoverable uranium and plutonium. Shipment of radioactive waste to licensed facilities or to licensed burial sites for disposal. Treatment of waste and scrap material



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**1.6.5 Decommissioning Funding Plan**

NFS requests exemption from the requirements of 10 CFR 70.25(f) for a financial assurance plan using one of the specified methods. The financial arrangements to assure that decommissioning funds will be available are set forth in Chapter 7.

**1.6.5.1**

The exemption stated above is applicable to the decommissioning activities for which the U.S. Government has assumed liability per Appendix A of Chapter 9 of this license. The NFS/USDOE Contract language in said Appendix A makes it necessary for NFS to establish a cost estimate and a financial assurance plan for those decommissioning activities not covered by the Government. The financial arrangements for funding such decommissioning activities are set forth in Chapter 7.

**1.6.5.2**

The exemption stated above is also applicable to the decommissioning activities for which the U.S. Government has assumed liability per the U.S. Department of Energy and Tennessee Valley Authority Interagency Agreement described in Appendix B of Chapter 9 of this license. The financial arrangements for funding such decommissioning activities are set forth in Chapter 7.

**1.6.6 Decommissioning-Related Activities**

Facilities or grounds may be remediated/decontaminated on a project-by-project basis prior to the end of plant life. These projects will address portions of the facility no longer in use or in need of decontamination to protect the environment. The portions of the NFS plant subject to these operations may be used for future licensed activities, require clean-up to protect the environment, or be conducted as a precursor to decommissioning an area under a NRC approved final status survey and release plan. These operations may include:

1. Dismantlement of contaminated buildings and equipment;
2. Pumping and treatment of contaminated groundwater/surface water;
3. Washing, spraying, stripping, vacuuming, or otherwise cleaning the surfaces of structures or equipment;
4. Scabbling, scaling, or otherwise decontaminating structural and equipment surfaces;
5. Characterization efforts; and,
6. Source reduction measures, including removal of soil and debris.



[REDACTED]

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Changes to approved processes, procedures, facilities, and equipment necessary to perform decommissioning-related activities will be implemented in accordance with the change process discussed in Chapter 11 (Sections 11.7.7 and 11.7.8).

NOTE: The activities authorized in this section will not directly result in license termination for any portion of the site. The process of license termination will commence by submitting a final status survey and release plan for NRC review/approval and in a manner consistent with applicable regulations and guidance.

### **1.7 Definitions**

Definitions for terms specific to a particular safety function may be given in the corresponding chapter on that function. Definitions for several terms used throughout license conditions are set forth below:

#### **1.7.1 Discipline Manager**

The discipline manager is the manager who is responsible for implementation of safety requirements in the area assigned to him by the appropriate discipline vice-president; e.g., operations discipline manager or security discipline manager. As used in this license renewal application, the general title "discipline manager" does not necessarily refer to the title of any specific position in NFS' system of organization and position nomenclature.

#### **1.7.2 <sup>235</sup>U Enrichments**

As used in this application for license renewal, the term "low enriched uranium" is defined as any compound of uranium in which the enrichment in the isotope uranium-235 is less than 20 percent by weight. The terms "high enriched uranium" or "highly enriched uranium" are defined as any compound of uranium in which the enrichment in the isotope uranium-235 is equal to or greater than 20 percent by weight.

#### **1.7.3 Nuclear Safety**

Nuclear criticality safety.

#### **1.7.4 Operating Procedure**

An operating procedure is a written set of instructions for production and support groups used in the handling, processing, and storage of Special Nuclear Material. Operating procedures contain the limits and controls set up by the Safety Discipline (see below).



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Operating procedures are approved by the initiating discipline manager, the safety discipline manager, and the appropriate safety review committee members, as selected by the safety review committee chair (or designee).

**1.7.5 Safety Procedure**

A safety procedure is a written approved instruction used for the conduct of safety function activities required by this license. Safety procedures are approved by the safety discipline manager.

**1.7.6 Safety Discipline**

All of the following functions: radiation safety and protection, criticality safety, industrial safety, and environmental protection, as further defined in Section 2.2.3.

**1.7.7 Will, Shall, Should, May, and Are**

Will and shall mean a requirement; should means a recommendation; and may means permission (optional), neither a requirement nor a recommendation. Are means an existing practice for which there is a requirement to continue.

**1.7.8 Annual (Year)**

An interval not to exceed 14 months. (Also, the multiplier used in biennial-every two years, etc. requirements, e.g. Biennial =  $2 \times 14 = 28$  mo.)

**1.7.9 Semiannual**

An interval not to exceed 7 months.

**1.7.10 Quarterly**

An interval not to exceed 4 months.

**1.7.11 Criticality Control**

The administrative and technical requirements established to minimize the probability of achieving inadvertent criticality in the environment analyzed.

**1.7.12 Audits and Inspections**

Examinations made to verify that operations are being conducted according to established criteria. Audits are formal examinations made to verify that operations are being



[REDACTED]

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conducted according to established criteria. Inspections are routine reviews to check that operations are being conducted according to approved procedures. Audits are more formal and less frequent than inspections.

**1.7.13 Work Area Air Samples**

Work area air samples are stationary air samplers demonstrated to be representative of workers breathing air. If stationary air samplers have not been demonstrated to be representative, the results of lapel air samplers will constitute work area air samples.

**1.7.14 Discipline Vice-President**

The discipline vice-president is the vice-president who is responsible for implementation of safety requirements in the area assigned to him by the president; e.g. production discipline vice-president, safety discipline vice-president. As used in this license renewal application, the general title "discipline vice-president" does not necessarily refer to the title of any specific position in NFS' system of organization and position nomenclature.

**1.7.15 Equivalent Experience**

For the purpose of meeting educational requirements, two (2) years experience is considered to be equivalent to one (1) year of post-secondary education. For example, two (2) years of post-secondary education (associate degree) in a relevant field and four (4) years experience will satisfy the requirement for a B.S. degree (4 years of post-secondary education).

**1.7.16 U-233 Action Levels**

The action levels used for U-233 shall be those used for highly enriched uranium (HEU).

**1.7.17 Protected Area**

A Protected Area is a site area bounded by a double fence, separated by an exclusion zone, designed to provide physical security. The area contains radioactive material processing, storage, and laboratory areas, as well as support function.

**1.7.18 Restricted Area**

A Restricted Area is a site area in which individuals may be exposed to radiation or radioactive material at levels or concentrations in excess of that allowed the general public (See definition in 10 CFR 20.1003). This could include any location at the NFS Erwin Facility, depending upon activities conducted and the exposure potential as evaluated by the safety function.



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## SPECIAL NUCLEAR MATERIAL LICENSE

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### CHAPTER 1

#### 1.7.19 Controlled Area

A Controlled Area is a site area where uncontained radioactive material is present, such that contamination levels are likely to be encountered in excess of acceptable levels for unrestricted use. This type of area, designated for contamination control purposes, requires various levels of protective clothing and other personnel protective actions. It could include any location within the Restricted Area either on a permanent or temporary basis.

#### 1.7.20 Uncontrolled Area

An Uncontrolled Area is a site area where radioactive materials may be handled in the form of sealed sources, in packages or closed containers, in small amounts (air samples, bioassay samples, etc.), or not at all. This type of area is designated for contamination control purposes and is not likely to have contamination at levels in excess of those acceptable for unrestricted use.

#### 1.7.21 Safety-Related Equipment

Safety-Related Equipment (SRE) are active or passive engineered safety controls that prevent or mitigate accidents or upset conditions that could result in significant consequences. Significant consequences are defined as:

- Criticality
- Greater than 5 rem (TEDE) exposure to a member of the public
- Intake of 30 milligrams of uranium in soluble form by a member of the public
- An exposure to hydrogen fluoride in air equivalent to immersion for 30 minutes in a concentration of 25 milligrams per cubic meter to a member of the public
- An employee exposure greater than 100 rem (TEDE)

The quantifying and estimating of consequences will be performed in accordance with written, approved procedures.