

Briefing on NFS' BPF License Amendment Application

Presented by
Nuclear Fuel Services, Inc.

to the
United States Nuclear Regulatory Commission

May 20, 2002

Rockville, Maryland



Purpose

- Review NFS' evaluations of the BPF process systems per License Condition S-25
- Provide scope of amendment application and supplemental information to be submitted to NRC

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Outline

- Purpose
- Summary of Licensing Actions to Support HEU Dissolution & Downblending Operations at BPF
- Overview of BPF Process
- Overview of NCS Analysis for BPF
- Summary of NFS' Change Control Process
- Scope & Results of S-25 Reviews for BPF
- Summary
- Discussion

Summary of Licensing Actions

Scott Kirk, Licensing Specialist

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Summary of Licensing Actions to Support HEU Operations

- April 17, 2001 - NFS' ISA Plan stated that the schedule for submitting an ISA Summary to address other business ventures (e.g., BLEU Project downblending operations) expected to occur in the near future may need to be adjusted.
- August 28, 2001 - NFS' Licensing Plan of Action (LPA) stated that downblending operations were being relocated from 200 Complex to Bldg. 333 and addressed anticipated changes/enhancements to dissolution and downblending processes.
 - License amendment to be submitted July 2002.
 - NRC approval July 2003.

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Summary of Licensing Actions (continued)

- December 13, 2001 - NFS discussed change control for downblending operations.
 - 10 CFR 70.72 “*Change Control*” process appropriate for determining process steps requiring prior NRC approval.
 - License Condition S-25 criteria consistent with 70.72.
 - Consistent with Section 4.2.1 of the LPA, NFS stated that NRC would be briefed on the design and changes to the dissolution & downblending process once S-25 reviews complete.
- NFS has completed S-25 reviews for all process steps supporting BPF operations.

Summary of BPF Process

Pat Koppel, Project Director

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Nuclear Criticality Safety Overview of BPF Project

Chris Miller, Nuclear Criticality Safety Engineer

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Terms

- BLEU – Blended Low Enriched Uranium
- BPF – BLEU Preparation Facility
- Customer – Framatome ANP
- FG – Favorable Geometry
- UFG – Unfavorable Geometry
- MAA – Material Access Area
- UN – Uranyl Nitrate
- HEU – Highly Enriched Uranium

NCSE Summary

Project Objective

- Provide to customer's facility 4.95 % enriched UN at 180 - 200 gU/l derived from HE U metal, HE UAl_x alloy, and natural uranium oxide.

NCSE Summary

Process Steps

- High Security Storage Area
- HE U Metal Sampling
- HE U Metal Dissolution
- HE UAl_x Alloy Dissolution
- Solvent Extraction
- Natural Uranium Oxide Dissolution
- Downblending
- Liquid Waste Discards
- Process Ventilation

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NCSE Summary

Liquid Waste Discards

- Identical to systems currently used to discard Building 302 wastes
- Engineered (In-Line Monitor) and Administrative (Dual Sampling) controls used prior to transfer to UFG

Process Ventilation

- **Extension of 300 Complex Ventilation Systems**
- **Engineered Concentration Controls (HEPA, Overflows & Siphon Breaks)**
- **Administrative Concentration Controls (NDA Scans & Scrubber Sampling)**

Change Controls and Summary of S-25 Reviews for BPF

Rik Droke, Director of Licensing & Compliance

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NFS Change Control Process

- SNM-124 has contained “*change control*” provisions since approximately 1977.
- Change control process is defined in license and various procedures (e.g., Internally Authorized Change (IAC) Procedure).
 - Detailed review provided to NRC during a meeting at NFS on August 30, 2000.
- NFS recently revised license condition S-25 consistent with 10 CFR 70.72.
- IAC evaluations, approved by the Safety & Safeguards Review Council, include the following:
 - safety reviews for normal operations;
 - revisions to ISA Summary; and
 - development of license amendment applications and regulatory permits.

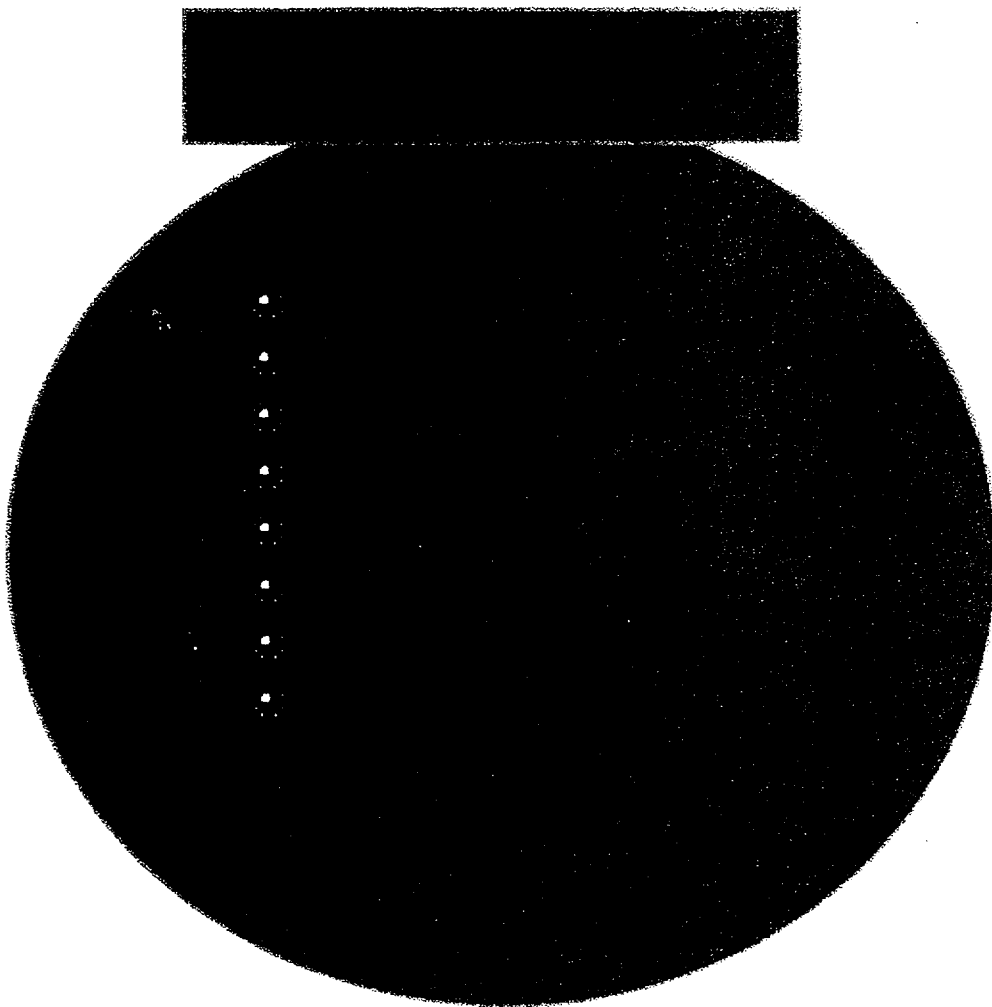


NFS Change Control Process (continued)

- S-25 reviews are performed by safety personnel comprising nuclear criticality safety, health physics, safety analysis, environmental safety and industrial safety.
- S-25 reviews by safety disciplines for BPF process steps completed on April 29, 2002.
 - SSRC Chair and Safety Director concurred with S-25 results on May 3, 2002.
- Results of these safety reviews provide basis for determining BPF process steps required to be submitted with license amendment application.
 - For these process steps, an ISA Summary will be submitted with amendment application in accordance with 10 CFR 70.65 “*Additional Contents of Applications.*”

Results of S-25 Reviews

S-25 Results



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Results of S-25 Reviews

S-25 Results

High Security Storage Area

- Existing safety basis described in ISA Summary for KAST HEU Storage
- Process and safety controls described in Chapter 15.10 of SNM-124

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Results of S-25 Reviews

S-25 Results

The S-25 results of the reviews are summarized in the following table. The table shows the number of findings, the number of findings that are classified as "Major", and the number of findings that are classified as "Minor". The table also shows the number of findings that are classified as "Not a Finding" and the number of findings that are classified as "Not Applicable".

Solvent Extraction

- Existing safety basis described in ISA Summary for KAST
- Process and safety controls described in Chapters 15.10 and 15.3.8 of SNM-124

Results of S-25 Reviews

S-25 Results

On 12/15/2011, the S-25 Review was completed. The review was conducted by the S-25 Review Team, which consisted of the S-25 Review Team Lead, the S-25 Review Team Members, and the S-25 Review Team Observer. The review was conducted in accordance with the S-25 Review Process, which is described in the S-25 Review Process Document. The review results are summarized in the S-25 Review Results Document. The review results are as follows:

- The S-25 Review Team identified a total of 10 S-25 Review Findings.
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HE U Metal Dissolution

- Existing safety basis described in ISA Summary for KAST
- Process and safety controls described in Chapter 15.10 of SNM-124

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Results of S-25 Reviews (Continued)

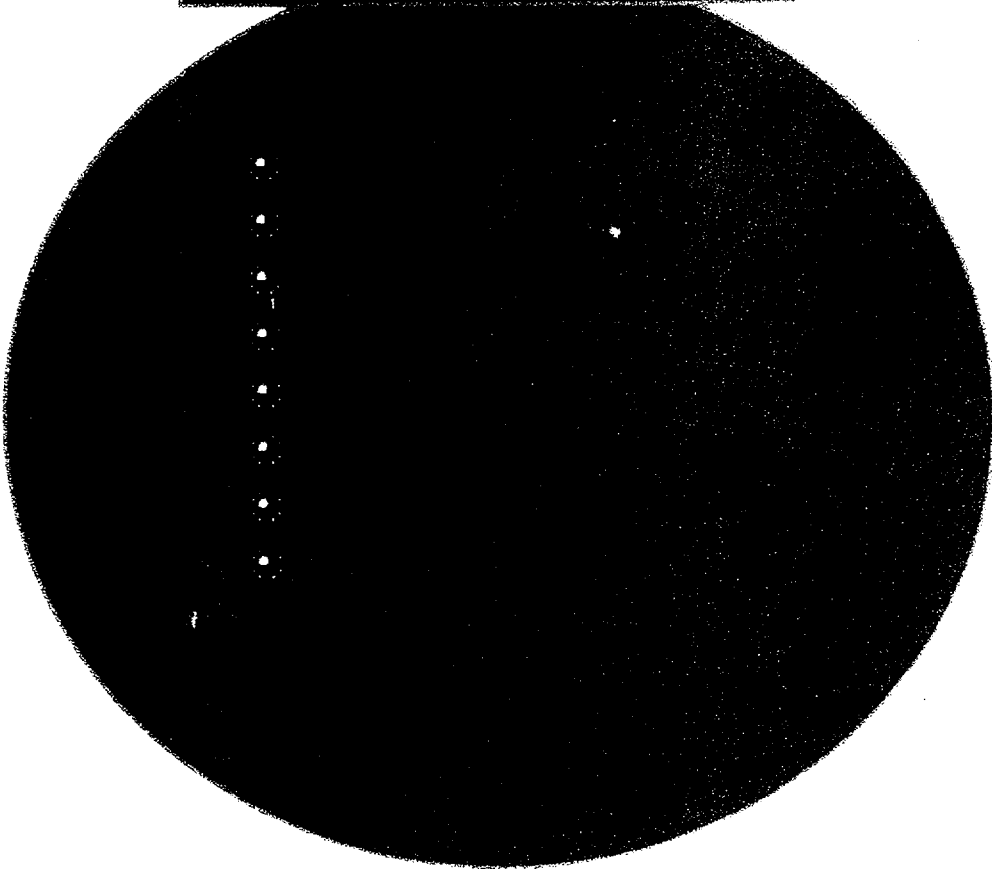
S-25 Results

Process Ventilation

- Existing safety basis described in ISA Summary for KAST
- Process and safety controls described in Chapter 15.10 of SNM-124

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**Results of S-25
Reviews (Continued)**



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S-25 Results

Resolution of the findings of the S-25 review is required for the KAST to be approved for operation. The findings of the S-25 review are listed in the table below.

Liquid Discards

- Existing safety basis described in ISA Summary for KAST
- Process and safety controls described in Chapter 15.10 of SNM-124

Results of S-25 Reviews (Continued)

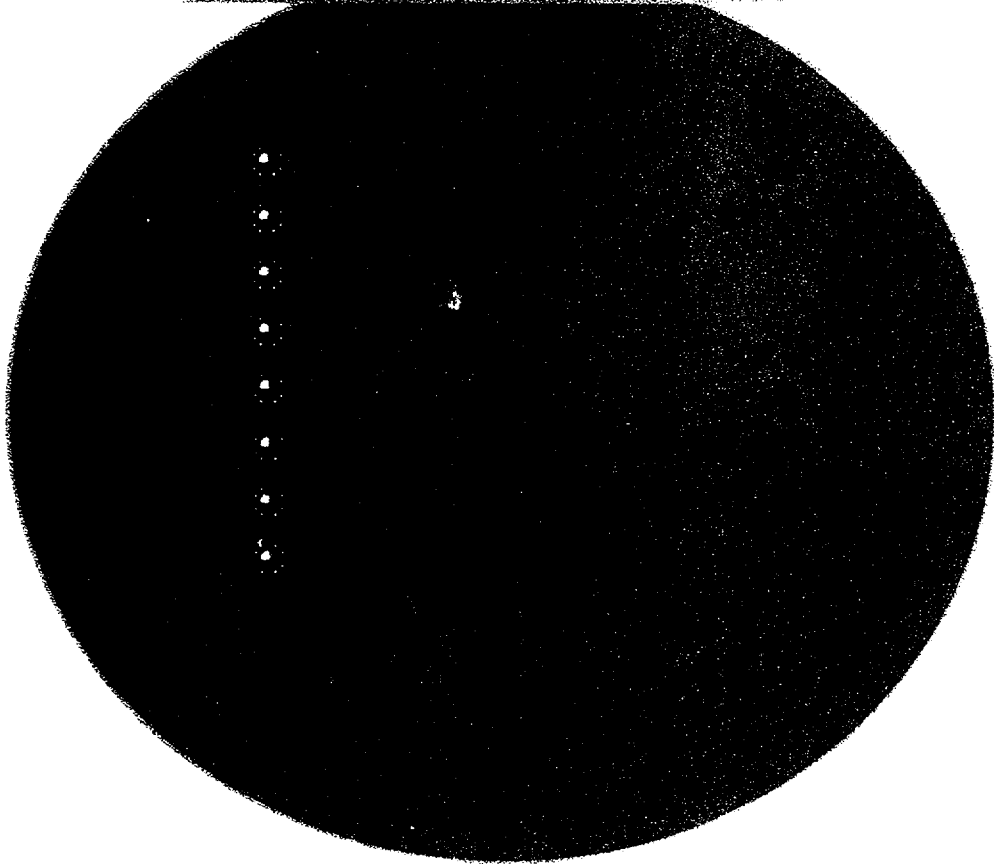
S-25 Results

HE UAl_x Alloy Dissolution

- NRC approval required
- Changes to process chemistry

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**Results of S-25
Reviews (Continued)**



S-25 Results

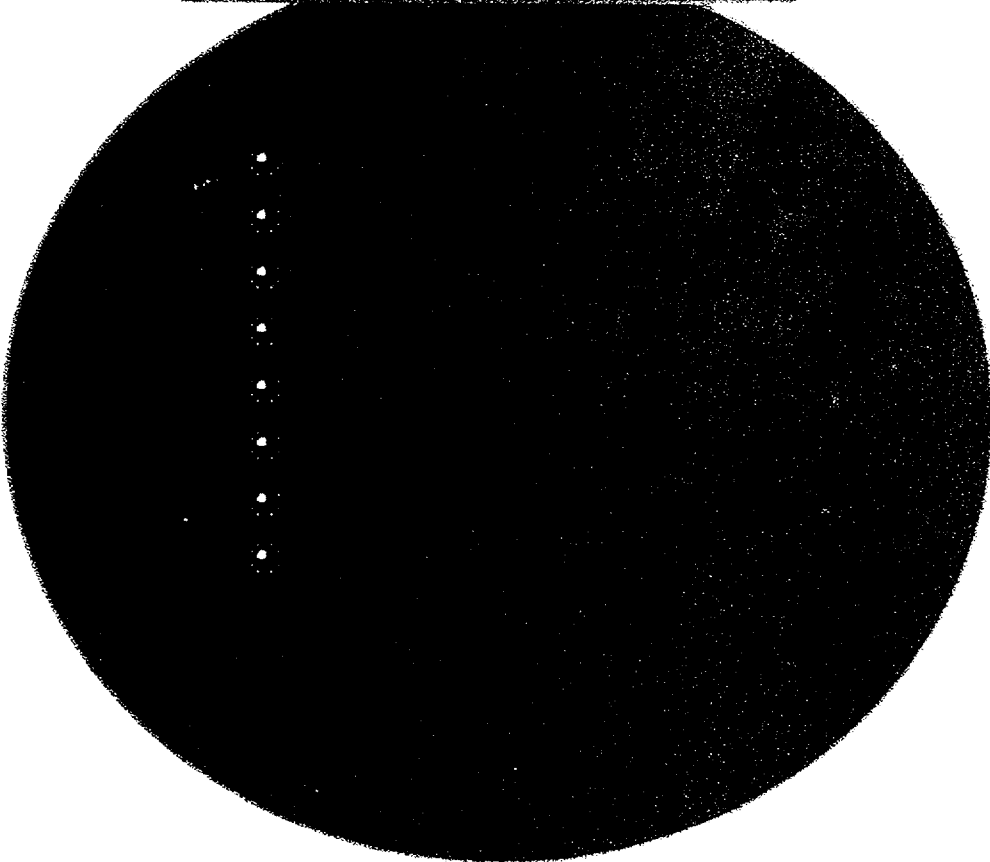
Approved for
downblending
to LEU

HEU to LEU Downblending

- NRC approval required
- Administrative changes to Part I of SNM-124

Results of S-25 Reviews (Continued)

[Redacted]



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S-25 Results

The following table summarizes the results of the S-25 reviews. The table is organized by review number, the specific area reviewed, and the findings. The findings are categorized as 'Satisfactory', 'Needs Improvement', or 'Unsatisfactory'. The table also includes a column for the date of the review and the reviewer's name.

Review Number	Area Reviewed	Findings	Date	Reviewer
1	Process Safety	Satisfactory	10/15/2023	J. Smith
2	Material Handling	Needs Improvement	11/02/2023	M. Jones
3	Emergency Response	Satisfactory	11/15/2023	K. Brown
4	Environmental Controls	Unsatisfactory	12/01/2023	L. Green
5	Quality Assurance	Satisfactory	12/15/2023	P. White
6	Documentation	Needs Improvement	01/05/2024	R. Black
7	Training	Satisfactory	01/20/2024	S. Gray
8	Facility Maintenance	Unsatisfactory	02/01/2024	T. Blue
9	Security	Satisfactory	02/15/2024	V. Red
10	Compliance	Needs Improvement	03/01/2024	W. Yellow

HE U Metal Sampling

- Compared safety basis with typical process sampling of HEU Materials (glove box operations)
- Process and safety controls described in Chapter 15.10 of SNM-124