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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 NRC, License Amendment Request for the Oxide Conversion Building and Effluent Processing Building at the BLEU Complex, dated October 23, 2003 (21G-03-0277)
3) NRC Licensing Review to Support License Amendment Request for the Oxide Conversion Building and Effluent Processing Building, conducted on February 10-11, 2004

Subject: Commitment Letter to Address NRC Licensing Review Questions Pertaining to Baseline Design Criteria for the OCB and EPB

Dear Sir:

Nuclear Fuel Services, Inc. (NFS) hereby submits responses to questions raised during the licensing review that was conducted in Rockville, Maryland (Reference 3). These responses reflect the discussions with your staff during the licensing review that was conducted in the referenced meeting.

As noted in the attached responses, safety basis documents supporting this licensing review for the Oxide Conversion Building (OCB) and Effluent Processing Building (EPB) will be updated as necessary. As such, this submittal contains commitments that will be incorporated into the Integrated Safety Analysis Summary for the OCB and EPB located at the BLEU Complex.

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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-04-0044) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.

B. Marie Moore
Vice President
Safety and Regulatory

JSK/lsn
Attachment

cc:
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Attachment

NRC Licensing Review Questions Pertaining to Baseline Design Criteria for the OCB and EPB

NRC Question (1): Clarify the treatment of external events and natural phenomena. The revised ISA does not discuss the credibility and consequences of all credible accidents. In some cases, NFS may have given credit in the ISA for the effectiveness of equipment that is not designated as IROFS. Specifically,

NRC Question1.a: Section 4.2.6, Section 6.1, Earthquake.

The description of IROFS OCB-11 lists the BLEU OCB and EPB. Clarify the extent, or boundaries of these IROFS.

Basis for request: The NRC's regulations require, in 10 CFR 70.64(a), baseline design criteria, that each prospective applicant or licensee shall address the baseline design criteria in the design of new facilities and requires that all facilities and processes comply with the '70.61 performance requirements. Specifically, the regulation requires that the design must provide for adequate protection against natural phenomena with consideration for the most severe documented historical events for the site. The NRC's regulations (10 CFR 60.65(a)(6)) require that NFS provide a brief description of each item relied on for safety in sufficient detail to understand their functions in relation to the performance requirements of '70.61. In addition, The NRC's regulations (10 CFR 70.61(e)) requires each engineered or administrative control or control system necessary to comply with paragraphs (b), (c), or (d) of this section shall be designated as an item relied on for safety. The NRC's regulations (10 CFR 70.62(c)(vi) also require that the integrated safety analysis identifies for each item relied on for safety identify the (1) characteristics of its preventative, mitigative, or other safety function, and (2) the assumptions and conditions under which an item relied on for safety supports compliance with the performance requirements.

NFS Response:

Considering the low seismic activity rating for the Erwin, TN area and the seismic design requirements of the 1999 Standard Building Code (see ISA Summary Sections 1.5.2 and 4.2.6), an earthquake would not be expected to result in significant consequences compared to 10 CFR 70.61 levels. However, IROFS OCB-11 was assigned to the OCB and EPB to prevent an assumed high consequence event that could result from a seismic event within the specified threshold envelope. This is consistent with similar IROFS applications for the UNB and BPF. The boundary of IROFS OCB-11 is the main OCB and EPB structures and internal components, which are applicably constructed in accordance with the seismic design requirements of the 1999 Standard Building Code. Implementation of the IROFS requires any future modifications to the OCB/EPB structures or internal components to be evaluated per License Condition S-25 criteria, which includes review against the Standard Building Code and other applicable codes.

NRC Question 1.b: Section 1.3.2, Section 4.2.6, Section 6.1 & 6.2, Winds and Storms.

Clarify if a failure of the building during a high wind or storm event result in an event with high or intermediate level consequences. Provide additional clarification as to the definition of IROFS OCB-12. OCB-12 currently references the NFS BLEU UNB building. Clarify the extent, or boundaries of this IROFS.

Basis for request: The NRC's regulations require, in 10 CFR 70.64(a), baseline design criteria, that each prospective applicant or licensee shall address the baseline design criteria in the design of new facilities and requires that all facilities and processes comply with the '70.61 performance requirements. Specifically, the regulation requires that the design must provide for adequate protection against natural phenomena with consideration for the most severe documented historical events for the site. The NRC's regulations (10 CFR 60.65(a)(6)) require that NFS provide a brief description of each item relied on for safety in sufficient detail to understand their functions in relation to the performance requirements of '70.61. In addition, The NRC's regulations (10 CFR 70.61(e)) requires each engineered or administrative control or control system necessary to comply with paragraphs (b), (c), or (d) of this section shall be designated as an item relied on for safety. The NRC's regulations (10 CFR 70.62(c)(vi) also require that the integrated safety analysis identifies for each item relied on for safety identify the (1) characteristics of its preventative, mitigative, or other safety function, and (2) the assumptions and conditions under which an item relied on for safety supports compliance with the performance requirements.

NFS Response:

Considering the rarity of severe storm conditions in the Erwin, TN area and the wind load resistance design requirements of the 1999 Standard Building Code (see ISA Summary Sections 1.3.2 and 4.2.6), winds and storms would not be expected to result in significant consequences compared to 10 CFR 70.61 levels. However, IROFS OCB-12 was assigned to the OCB and EPB to prevent an assumed high consequence event that could result from high winds within the specified threshold envelope. This is consistent with similar IROFS applications for the UNB and BPF. The boundary of IROFS OCB-12 is the main OCB and EPB structures and roofs, which are applicably constructed in accordance with the wind load resistance design requirements of the 1999 Standard Building Code. Implementation of the IROFS requires any future modifications to the OCB/EPB structures or roofs to be evaluated per License Condition S-25 criteria, which includes review against the Standard Building Code and other applicable codes.

The UNB reference in the IROFS OCB-12 description is incorrect; the corrected OCB/EPB description will be included in the ISA Summary update.

NRC Question1.c: Section 1.4, Section 4.2.6, Section 6.1 & 6.2, Flooding.

The ISA Summary lists OCB-13 as IROFS for configuration control. Please clarify if it was intended to control, or in fact may be defense-in-depth, for the configuration of the systems during a larger than design basis flood event. Provide an estimate for a flood frequency for a flood event that reaches the foundation of the facility, if available.

Basis for request: The NRC's regulations require, in 10 CFR 70.64(a), baseline design criteria, that each prospective applicant or licensee shall address the baseline design criteria in the design of new facilities and requires that all facilities and processes comply with the '70.61 performance requirements. Specifically, the regulation requires that the design must provide for adequate protection against natural phenomena with consideration for the most severe documented historical events for the site. The NRC's regulations (10 CFR 60.65(a)(6)) require that NFS provide a brief description of each item relied on for safety in sufficient detail to understand their functions in relation to the performance requirements of '70.61. In addition, The NRC's regulations (10 CFR 70.61(e)) requires each engineered or administrative control or control system necessary to comply with paragraphs (b), (c), or (d) of this section shall be designated as an item relied on for safety. The NRC's regulations (10 CFR 70.62(c)(vi) also require that the integrated safety analysis identifies for each item relied on for safety identify the (1) characteristics of its preventative, mitigative, or other safety function, and (2) the assumptions and conditions under which an item relied on for safety supports compliance with the performance requirements.

NFS Response:

IROFS OCB-13 was established as a nuclear criticality safety control to ensure that structures, systems, and components such as favorable geometry columns, dikes, floors, and piping will be applicably maintained as defined in the nuclear criticality safety basis. This IROFS originated from the BPF ISA review (reference RAI dated July 30, 2003 question 6 – TAC # L31693 and RAI Response dated September 3, 2003 – 21G-03-0242). The primary intent of this IROFS is maintaining nuclear criticality safety dimensional constraints for structures, systems and components (e.g. floor dimensions, column diameters, spacing requirements, etc.) during routine operations and maintenance activities. However, it indeed may also be credited as a defense-in-depth control for system configurations during certain natural phenomena events such as flooding.

Frequency estimation for a flood event that could reach OCB/EPB foundations is not available. This estimate was not deemed necessary by the ISA team because the Process Hazards Analysis found no credible accident scenario resulting from local area flooding. Therefore, no physically credible external event scenario was identified that could cause facility flooding.

NRC Question1.d: Section 1.2.1.1 & Section 4.2.6, Studsvik Processing Facility.

These sections describe the consequence of a radiological release from the Studsvik facility. Please clarify if NFS considers this scenario to be a credible accident, and if so, discuss the level of consequences (high, intermediate, other) that may result. If the consequence fall into the high or intermediate consequence categories, describe IROFS and management measures, if necessary.

Basis for request: The NRC's regulations (10 CFR 70.61) require each applicant or licensee to evaluate the risk of each credible high and intermediate consequence accident and apply engineered and/or administrative controls. 10 CFR 70.65(b)(4) requires, in part, the ISA Summary to demonstrate licensee's compliance with the performance requirements of 10 CFR 70.61.

NFS Response:

The Studsvik Processing Facility is classified by the State of Tennessee as a low hazard facility because of its radiological source term (reference Section 1.2.1.1 and 4.2.6 of the ISA Summary). As such, a radiological release from this facility resulting in high or intermediate consequences to the OCB/EPB is not considered a credible accident. Therefore, implementation of IROFS and management measures is not necessary. This safety basis is consistent with the approved UNB and BPF safety evaluations.

NRC Question1.e: Section 1.2.1.2 & Section 4.2.6, CSX Transportation Railroad Yard.

The bounding accident scenario described is a boiling liquid expanding vapor explosion. Please clarify if NFS considers this to be a credible accident, and if so, discuss the consequences (overpressure magnitude, heat load, etc.) that may be expected for this type of accident, include all references. If the consequence fall into the high or intermediate consequence categories, describe IROFS and management measures, if necessary.

Basis for request: The NRC's regulations (10 CFR 70.61) require each applicant or licensee to evaluate the risk of each credible high and intermediate consequence accident and apply engineered and/or administrative controls. 10 CFR 70.65(b)(4) requires, in part, the ISA Summary to demonstrate licensee's compliance with the performance requirements of 10 CFR 70.61.

NFS Response

A boiling liquid expanding vapor explosion (BLEVE) does not produce remote overpressures and would not present a significant thermal exposure to the OCB or EPB. Based on the discussions in Sections 1.2.1.2 and 4.2.6 of the ISA Summary, a BLEVE originating from the CSX Transportation Railroad Yard resulting in high or intermediate consequences to the OCB/EPB is not considered a credible accident. Therefore, implementation of IROFS and management measures is not necessary. This safety basis is consistent with the approved UNB

and BPF safety evaluations.

NRC Question 1.f: Section 2.5, Section 2.9.1.1, & Section 3.9.1, Bulk Hydrogen Storage and Vaporization.

In Section 2.5 of NFS's ISA Summary it notes, "Operational, maintenance, and safety issues [emphasis added] for the system are provided by the vendor." Section 3.9.1 states that the location of the bulk storage tank is for safety reasons [emphasis added]. Provide justification for not including a postulated ignition or explosion of the bulk hydrogen storage and vaporization system as an external event or discuss how the ISA Summary document the bounding of this postulated accident. Regarding an external event only, clarify if an explosion or deflagration of this tank is a credible accident, discuss whether they are of high or intermediate consequences (overpressure magnitude, heat load, etc.) that may be expected for this type of accident, include all references. If an accident scenario involving this system has high or intermediate consequences, explain how the vendor will be qualified to operate, maintain, and/or modify this system. Identify IROFS if necessary. Describe the management measures, if necessary, to be applied to ensure its proper design, construction, and installation.

Basis for request: The NRC's regulations (10 CFR 70.61) require each applicant or licensee to evaluate the risk of each credible high and intermediate consequence accident and apply engineered and/or administrative controls. 10 CFR 70.65(b)(4) requires, in part, the ISA Summary to demonstrate licensee's compliance with the performance requirements of 10 CFR 70.61.

Response

A bulk storage hydrogen gas initiated fire or explosion resulting in high or intermediate consequences is not considered a credible accident due to the (1) bulk hydrogen gas supply being outside of the OCB/EPB structures, and (2) selection of material-of-construction incorporated into the OCB/EPB design. Therefore, this accident scenario was not included as an external event and implementation of IROFS and management measures is not necessary.

NRC Question1.g: Section 1.2.1.3, Section 4.2.6, Local and Regional Airports.

Clarify if NFS considers the hazard of aircraft strike on the facility (either from local airport traffic or other personal/commercial air traffic traversing the site) to be a credible accident, and if so, discuss the level of consequences (high, intermediate, other) that may result. If the consequence fall into the high or intermediate consequence categories, describe IROFS and management measures, if necessary.

Basis for request: The NRC's regulations (10 CFR 70.61) require each applicant or licensee to evaluate the risk of each credible high and intermediate consequence accident and apply engineered and/or administrative controls. 10 CFR 70.65(b)(4) requires, in part, the ISA Summary to demonstrate licensee's compliance with the performance requirements of 10 CFR 70.61.

NFS Response

Based on the discussions in Sections 1.2.1.3 and 4.2.6 of the ISA Summary, an accidental aircraft strike on the OCB/EPB facility is not considered a credible accident. Therefore, implementation of IROFS and management measures is not necessary. This safety basis is consistent with the approved UNB and BPF safety evaluations.

NRC Question1.h: Section 1.2.1.4, Section 4.2.6, Carolina Avenue.

Clarify if NFS considers the hazard of vehicle impact on the facility (either from local or appropriate commercial traffic) to be a credible accident, and if so, discuss the level of consequences (high, intermediate, other) that may result. If the consequence fall into the high or intermediate consequence categories, describe IROFS and management measures, if necessary.

Basis for request: The NRC's regulations (10 CFR 70.61) require each applicant or licensee to evaluate the risk of each credible high and intermediate consequence accident and apply engineered and/or administrative controls. 10 CFR 70.65(b)(4) requires, in part, the ISA Summary to demonstrate licensee's compliance with the performance requirements of 10 CFR 70.61.

NFS Response

Based on the distance of Carolina Avenue from the BLEU Complex and the complex's controlled area security fencing, an accidental vehicle impact on the OCB/EPB facility resulting in high or intermediate consequences is not considered a credible accident. Therefore, implementation of IROFS and management measures is not necessary. This safety basis is consistent with the approved UNB and BPF safety evaluations.

NRC Question 1.i: Section 2.9.1.1, External Ignition and Fire Sources (Natural Gas).

Provide justification for not including ignition or explosion of natural gas as an external event or discuss how the ISA Summary document the bounding of this postulated accident. Clarify if a natural gas explosion event result in an event with high or intermediate level consequences. If the consequence fall into the high or intermediate consequence categories, describe IROFS and management measures, if necessary.

Basis for request: The NRC's regulations (10 CFR 70.61) require each applicant or licensee to evaluate the risk of each credible high and intermediate consequence accident and apply engineered and/or administrative controls. 10 CFR 70.65(b)(4) requires, in part, the ISA Summary to demonstrate licensee's compliance with the performance requirements of 10 CFR 70.61.

NFS Response

A natural gas initiated fire or explosion resulting in high or intermediate consequences is not considered a credible accident due to the: (1) natural gas use points being outside of the OCB/EPB structures, and (2) selection of material-of-construction incorporated into the OCB/EPB design. Therefore, this accident scenario was not included as an external event and implementation of IROFS and management measures is not necessary.

2.0 Section 4.4 Management Measures.

As discussed during the NRC review meetings on February 10 - 11th, clarify the lockout/tagout program that would apply to the control of passive IROFS, such as valves, that are relied upon to stay in their safe position. Describe how this program would support the reliability estimates for passive IROFS the program is designed to control.

Basis for request: The NRC's regulations (10 CFR 70.62(c)(vi) require that the integrated safety analysis identifies for each item relied on for safety identify the (1) characteristics of its preventative, mitigative, or other safety function, and (2) the assumptions and conditions under which an item relied on for safety supports compliance with the performance requirements.

NFS Response

For valves that must remain open or closed as part of an IROFS function, FRA/NFS will place a warning tag and tamper-evident seal on the valve itself. The manually operated ball valves that are used for this purpose in the OCB have the ability to be locked or sealed in the open or closed position. A loop of plastic or metal wire is strung through the holes on the handle and body of the valve, and sealed in such a way that it must be cut off if the valve position is to be changed. These seals are accompanied by a warning tag. Operators are trained to only change the valve position of such a valve by approved procedure in the unusual case that the valve must be opened or closed (generally for isolation during repair).